# May/June 2002 Volume XIV, No. 3 n This Issue... he Environment US Army Corps of Engineers®



May/June 2002 Vol XIV, No.3



# US Army Corps of Engineers®

Public Works Digest is an unofficial publication of the US Army Corps of Engineers, Directorate of Military Programs, Installation Support Division, under AR 360-81. Method of reproduction: photo-offset; press run: 3,000; estimated readership: 40,000. Editorial views and opinions expressed are not necessarily those of the Department of the Army.

#### Address mail to:

CEMP-IS

Department of the Army
US Army Corps of Engineers,
Directorate of Military Programs
Installation Support Division
Attn: Editor, *Public Works Digest*,

441 G Street, NW Washington, DC 20314-1000 Telephone: (202) 761-5778 DSN 763 FAX (202) 761-8895 e-mail: alex.k.stakhiv@usace.army.mil

#### Kristine L. Allaman, P.E.

Chief-Installation Support Division, Directorate of Military Programs

#### Alexandra K. Stakhiv

Editor-Installation Support Division, Directorate of Military Programs

Design and Layout: David Hackett Corporate Visions, Inc. Washington, DC

Cover photo:

Reusing tank track to harden water crossing at Fort Carson (See p.18)



Printed on Recycled paper.

#### 3 Letter from the Editor

#### 



- **4-5** Army to honor environmental heroes
- **6** Fort Eustis/Fort Story stand guard over fragile habitat at mouth of Chesapeake Bay by Deborah Elliott
- 7 Top environmental quality program protects desert, Army readiness by Deborah Elliott
- 8 Secratary of the Army recognizes Fort Lee for environmental quality program by Deborah Elliott
- 9 Infantry cultural resource management leads way for federal agencies by Deborah Elliott
- 10 Fort Stewart and Hunter Army Airfield create healthy environment for soldiers by Jeannie Skillman
- 11 Bradley Environmental Management Team cited for environmental excellence in weapon system acquisition by Maria Applin
- 12 Texas wildlife biologist provides natural resources haven amid heavy fire by Deborah Elliott
- 13 George Gricius develops Installation Action Plan to streamline communication by Jeannie Skillman
- 13-15 Lake City AAP honored for its "green" bullets by Maria Applin
  - 15 Arizona Guard Ecobuilding Team wins EPA award

#### 



- 16 One year later—the Fort Bragg Sustainability Program by Lynda S. Pfau
- 17-18 Fort Lewis' conservation measures help during energy crisis by Barbara L. Sellers
- 18-19 Fort Carson reuses tank track to harden water crossing by Susan C. Galentine-Ketchum, Gwyn L. Howard, Heidi R. Howard, and Malcolm McLeod
- **19-21** Fort Drum's antifreeze recycling and fuel blending programs save money, prevent pollution *by Karen J. Freeman*
- 21-22 Using ferns for arsenic removal at Picatinny Arsenal by Dr. Steven L. Larson
  - 22 Residents restore Fort Belvoir's Accotink Bay by Wayne V. Hall
  - 23 Bald eagles build nesting place on Fort Benning by Laura Martinson
  - 24 Army and EPA break ground at APG on Earth Day by Jeannie Skillman
  - 25 Erosion control supports Airborne readiness by Robert DiMichele

#### Installation Management .....



- 26 Principles help Corps reaffirm commitment to environment by Candice Walters
- 27 FORSCOM holds annual Energy Managers Forum by Dave Payson
- 28-29 It's all about readiness by COL Stanley H. Lillie
- **30-31** Army Earth Day program hits stride by Deborah Elliott
  - **31** Path for funding ITAM land rehabilitation and management programs cleared by Deborah Elliott
  - 32 DoD oil recycling policy by William F. Eng
- 32-33 DoD Munitions Action Plan addresses difficult environmental, safety issues
  - 33 New guidance for cleaning indoor firing ranges
  - 34 Strategic Plan will address ranges, munitions
  - **35** Recycling at Army installations by Malcolm E. McLeod
- 35 HSMS software improves to meet requirements by Aaron Tomarchio
- **36-37** Sustainability a different shade of Army green by John Scharl
  - 38 Overcoating extends steel structures' life, abates lead-based paint by Dr. Ashok Kumar and Dr. Larry Stephenson
- **38-39** Specifying paint by Al Beitelman
- 40-41 Change in attitude makes saving environment team effort by Barbara L. Sellers
  - 41 Elimination of FY02 Barracks Upgrade Program (BUP) by Charles Huffman
  - 42 DoD establishes goal to eliminate inadequate family housing by Thomas A. Kraeer

#### Who's Who at HQ .......



43 Patricia A. Rivers—Chief, Environmental Division

#### LETTER FROM THE EDITOR



This month we will be saying farewell to our long-time deputy director at the Engineering and Housing Support Center (EHSC) and the Center for Public Works (CPW) and current deputy chief of the Installation Support Division (ISD)—George F. Braun. With almost thirty years of installation support experience, George will be sorely missed and truly a tough act to follow. His job, while rewarding, has never been an easy one, and I'm willing to bet that over the years, he's visited just about all of our Army installations and provided some kind of assistance to each. I am sure that you all join me in wishing George good luck in the future. I know he's looking forward to spending more time at home, playing with his first grandchild, George III, and traveling with his wife, Pam. I can't think of anyone who deserves it more!

On another note, this is also the time of year we typically associate with taking care of our environment. We celebrate Earth Day at the end of April each year, but what do we do the rest of the year? Caring for the environment should be a daily effort both at home and in the workplace. Each of us must find a way to make our environmental programs more effective, even if it's just recycling cans and bottles and newspapers. We at headquarters sometimes forget to stop and smell the roses, and more importantly, we forget that it is the installations that do the planting.

This issue of the Digest is dedicated to the recipients of the fiscal 2001 Secretary of the Army Environmental Awards. Our Environmental Awards section showcases each winner, detailing the outstanding contributions that the installation or individual or team made to benefit the environment. When you read these articles, you will understand why they were selected as tops from some very stiff competition.

In the Environmental Management section, USACE's Candy Walters explains the seven Environmental Operating Principles recently adopted by the Corps of Engineers. U.S. Army Environmental Center (AEC) Commander COL Stanley Lillie talks about how his organization is transforming itself to accommodate new requirements, while ACSIM's John Scharl gives us an update on sustainable design and development. This section also contains important information on DoD oil recycling policy, the Munitions Action Plan (MAP) recently issued by the Department of Defense, AEC's strategic plan to integrate environmental considerations into range and munitions management as well as new guidance on cleaning indoor firing ranges.

What can I say about the Installation Successes section... All the installations that wrote in had an exciting story to tell, from Fort Bragg's enviable Sustainability Program to Fort Carson's innovative reuse of tank track to Fort Lewis' model conservation measures to Fort Belvoir's clever bay restoration to Fort Benning's resident bald eagle couple to APG's contaminant-reducing tree planting efforts to Fort Drum's "free anti-freeze" program. Don't skip —please read them all.

Finally, be sure to read about Pat Rivers in the Who's Who at HQ section. If you've ever wondered who at Corps Headquarters is in charge of making all those environmental "decisions," here's your chance to get to know the Chief of the Environmental Division.

Until next time...

Alexandra K. Stakhiv

Alexandra K. Stakhiv, Editor, Public Works Digest PWD

P.S. As we go to press, we learn that the Advisory Council on Historic Preservation has issued a Program Comment for Capehart and Wherry Era Army Family Housing and Associated Structures and Landscape Features. It provides a one-time, Army-wide National Historic Preservation Act compliance action for all management actions (maintenance and repair, rehabilitation, layaway and mothballing, renovation, demolition or privatization) associated with the approximately 20,000 buildings of the Army's Capehart and Wherry Era (1949-1962) family housing program and eliminates the need for further project-by-project reviews at the installation. See the press release on p. 5.





# Army to honor environmental heroes

Within the last two years, individual Army installations:

- Opened a safe final resting place for Native American remains.
- Avoided \$10 million in environmental restoration costs.
- Planted sea grass on the Chesapeake Bay floor.
- Started pumping out an unleaded version of the Army's most common bullet round.

... All in the name of protecting the readiness of America's soldiers to defend the nation, today and in the future.

From the well-thought-out management practices at Fort Irwin, California, to the planting of sea vegetation at Fort Eustis, Virginia, the fiscal 2001 Secretary of the Army Environmental Awards highlight the scope of Army environmental programs as they honor its top achievers in the field.

Each year Army environmental professionals around the world compete for Department of the Army recognition in natural resources conservation, cultural resources management, environmental quality, pollution prevention and environmental cleanup.

Environmental stewardship plays an important role in the Army's plans to transform to a lighter, faster, more efficient 21st Century fighting force. Environmental programs account for a billion and a half dollars of the Army's operating budget.

This year the Army presented a total of 9 awards – 5 installation, 2 individual and 2 team - during a Pentagon ceremony held April 30. Winners of the Secretary of Defense Environmental Security Awards were honored at the center courtyard of the Pentagon on May 1.

#### The awards honor:

Forts Eustis, VA— Natural **Resources Conservation, Small Installation.** Fort Eustis, with its subinstallation, Fort Story, have a very effective, comprehensive natural resource management program to restore and protect natural areas in the Chesapeake Bay region while improving the ability of the post to carry out its mission. Eustis staff helped transplant 5,000 plugs of aquatic grass from other areas of the Chesapeake Bay to critical habitat near the post. The installation also gathered biological data on wetlands; rare, threatened and endangered species; timber: neo-tropical birds: and vascular plants.

Fort Eustis also won the fiscal 2002 Secretary of Defense Environmental Security Award in their category.

## Fort Irwin, CA— Environmental Quality, Non-Industrial Installation.

The solid waste program at Fort Irwin exceeded the Department of Defense goal of a 40 percent diversion of all solid waste generated by the year 2005. It has also exceeded the California requirement to reduce the 1990 baseline disposal of non-hazardous solid waste by 50 percent by the year 2000. Fort Irwin diverts solid waste from the landfill and processes it through recycling and composting facilities. In fiscal 2001, Fort Irwin realized a 400 percent increase in recycling and avoided \$430,000 in landfill fees.

Fort Lee, VA— Environmental Quality, Team. The installation's environmental quality programs range from National Environmental Policy Act (NEPA) compliance to spill prevention, spill response, and air and water pollution control. NEPA coordinators have prepared an Environmental Assessment for utility privatization that has become the template for other such documents throughout the U.S.

Army Training and Doctrine Command. All new training area and range staff learn to plan and conduct their activities in compliance with local, state and federal environmental regulations.

## Fort Benning, GA— Cultural Resource Management, Installation.

In managing the fort's priceless cultural resources, Benning's staff successfully integrates emerging technologies such as Geographical Information System (GIS) applications, precise curatorial rehabilitation and productive cooperation with eleven federally recognized American Indian tribes, historic preservation officers from Georgia and Alabama and the public. More than 800 cubic feet of historic and prehistoric artifact collections located using GIS have been housed at the post in a newly-established curatorial facility that can hold up to 2,800 cubic feet of artifacts.

Fort Stewart and Hunter Army Airfield, GA— Environmental Restoration, Installation. The installations' array of programs and initiatives reclamed approximately 150 acres of land. Over the past two years, the installation achieved "No Further Action" status for 281 out of 338 underground storage tanks while reducing the cost for completion by nearly \$10 million. By combining proactive efforts with lessons learned, Fort Stewart is also completing remedial actions well before the Department of Defense goals.

George Gricius, U.S. Army Forces Command— Environmental Restoration, Individual. Mr. George Gricius developed an Installation Action Plan (IAP) and workshop to increase communication between stakeholders and regulators while identifying past, current and future activities for all restoration sites at an installation. Gricius' IAP and workshop have been adopted Army-wide. This highly effective and clearly laid-out model has led





to an estimated cost avoidance of \$1 billion across U.S. Army Forces Command (FORSCOM), Army Materiel Command (AMC) and U.S. Army Reserve Command (USARC) over the years.

Bradley Environmental
Management Team, Warren, MI—
Environmental Excellence in Weapons
System Acquisition. The Bradley
Environmental Management Team (EMT)
functions as a vital part of the program
management for this significant national
arsenal. They ensure that Program
Management Office Bradley Fighting
Vehicle Systems activities conform with the
Department of Defense and Army's environmental and pollution prevention missions.

During the past year the Bradley EMT supported over 100 Project Management Office Bradley fighting Vehicle Systems' personnel, the United Defense Limited Partnership, prime contractor, integration and manufacturing located at 4 sites across the country, the Red River Army Depot in

Texarkana, Texas and various other Bradley Fighting Vehicle Systems training bases and fielding sites.

#### Lake City Army Ammunition Plant, Independence, MO— Pollution Prevention, Industrial Installation.

The plant was honored for work on lead-free tungsten alloy bullets along with a well-rounded and robust installation pollution prevention program. Its assistance with "green" bullets for example, addressed the need to protect the environment while at the same time ensured that soldiers of the United States receive the training required to survive on the battlefield. When the Army initiated the "green" bullet project, Lake City AAP researched and tested several alternatives of environmentally friendly bullet materials and provided feedback.

John D. Cornelius, Fort Hood, TX— Natural Resources Conservation, Individual. Mr. John Cornelius worked with the military and civilian communities of central Texas to create a sanctuary for the endangered goldencheeked warbler and the black-capped vireo while enhancing realistic soldier training on the land. He helped put into practice costeffective adaptive management techniques and developed a parasitic species (cowbird) control program that has become a national model.

For more information on the recipients of the Secretary of the Army 2001 Environmental Awards, please visit USAEC's Web site at http://aec.army.mil/. Click on the "News Room" button to locate complete press information.

USAEC manages the Secretary of the Army Awards Program for the Office of the Assistant Secretary of the Army for Installation Management.

POC is Robert DiMichele, (410) 436-2556, e-mail: robert.dimichele@aec.apgea.army.mil



# » » » Press Release « « « Capehart-Wherry compliance action passes ACHP

An Army-wide action designed to eliminate compliance requirements for the National Historic Preservation Act (NHPA) for installations with Capehart and Wherry Era housing was approved May 31 by the Advisory Council on Historic Properties (ACHP).

This is "a major action of unprecedented magnitude in ACHP or Army NHPA compliance history," said David Guldenzopf, chief of the Cultural Resources Branch at the U.S. Army Environmental Center. This is also the first federal agency action to take advantage of the "Program Comments" path to NHPA compliance. ACHP oversees NHPA compliance.

The change treats all 19,000 Capehart and Wherry Era properties as a single Army-wide compliance action. Within 10 years, all of this housing, built between 1949 and 1962, will be over 50 years old, the threshold for compliance under NHPA. The Army has Capehart-Wherry buildings at 57 installations, and it represents over one-half of all Army Family housing in the United States.

Section 106 of NHPA requires an extensive review process before renovation, rehabilitation, privatization or demolition of any building 50 years old or older. Without this new Army-wide programmatic action, each installation would have to go through this process for each project related to this housing. This regulatory review procedure can be very time-consuming and expensive, and would have presented a significant, near-term regulatory burden to installation commanders. The Army's Residential Communities Initiative for housing privatization will be a major beneficiary of this action.

POC is Dr. David Guldenzopf, Chief, USAEC Cultural Resources Branch, (410) 436-1580, e-mail: david.guldenzopf@aec.apgea.army.mil. PWD



# Fort Eustis/Fort Story stand guard over fragile habitat at mouth of Chesapeake Bay

by Deborah Elliott

Situated in the historic Tidewater region of Virginia, in the environmentally sensitive Chesapeake Bay watershed, the natural surroundings of Fort Eustis and its sub-installation Fort Story are a diverse cross of tidal marsh, sandy beaches, dunes and forested wetlands. The protection and enhancement of these natural resources requires skilled stewardship by the post's Directorate of Public Works Conservation Branch.

Of equal importance is the local mission to train soldiers in transportation, aviation maintenance, logistics, deployment doctrine and research. Fort Eustis and Story conservation staff work to balance mission requirements with their dedication to the stability of regional natural resources. They create natural resources management plans, work to restore wildlife habitat, and complete critical inventories and outreach efforts within the Army's Chesapeake Bay Initiative.

Because of its environmental ethic, Fort Eustis received the fiscal 2001 Secretary of the Army Environmental Award for Natural Resources Conservation for a Small Installation during an April 30 ceremony at the Pentagon. The post went on to win the Secretary of Defense Environmental Security Award in the same category.

A panel of non-military and Army natural resource experts, including representatives from The Nature Conservancy, the U.S. Fish and Wildlife Service and the International Association of Fish and Wildlife Services, judged competitors for the natural resources conservation award.

"This installation has developed a very effective, comprehensive natural resource management program which has proactively restored and protected natural areas while improving the ability of the post to carry out its mission," said Jeanette Gallihugh, a judging panel member and U.S. Fish and Wildlife Service biologist.

"Fort Eustis and Fort Story together have over 6,500 acres of "unimproved" land. This includes 25 miles of shoreline, 2,400 acres of wetlands and over 500 acres of contiguous coastal maritime forest," Gallihugh said. "Effective management of these natural communities in partnership with environmental agencies and organizations ensures ecosystem sustainability for years

to come...and that's a significant win for the environmental community," she said.

During the awards competition year, conservation staff completed and implemented Integrated Natural Resource Management Plans for both Fort Eustis and Fort Story, providing a strong foundation on which to build future years of conservation efforts. The team also completed natural resource baseline surveys and

inventories that included gathering biological data on wetlands; rare, threatened and endangered species; timber; neo-tropical birds; and vascular plants. Several inventories furthered research into particular species of interest, such as the eastern bigeared bat.

Degraded natural resource areas on Forts Eustis and Story have been restored to productive habitat by eliminating undesirable plant species through prescribed fire burns and by the planting of wildlife food and shelter plant species. And, of significant impact to the readiness mission, conservation staff applied environmental management to land rehabilitation and maintenance that helped open previously inaccessible or unusable training areas.

"It is impressive that a small installation like Fort Eustis/Fort Story can have such a big impact on the environmental arena," said Jim Bailey, judging panel member and biologist at Aberdeen Proving Ground, Md. "In my experience, it is indicative of the Army's drive for environmental leadership," Bailey said.

This leadership is evident in the installation's support of the Army's Chesapeake Bay Initiative, which details the Army's plan to help the Chesapeake Bay Commission meet its conservation goals. In the waters just off of Eustis, conservation staff partnered with the Alliance for the Chesapeake Bay to establish formerly abundant and ecologically important submerged aquatic vegetation, or SAV. After identifying suitable sites for planting, Eustis staff helped transplant 5,000 plugs of eelgrass and widgeon grass from other areas of the Bay to the critical bay habitat near the post.

POC is Deborah Elliott, (410) 436-1654, e-mail: deborah.elliott@aec.apgea.army.mil

Deborah Elliott writes for the US Army Environmental Center Public Affairs office.



Eustis Beach: Fort Story's 3.6 miles of shoreline border the Chesapeake Bay and Atlantic Ocean. Photo courtesy of Fort Eustis



# Top environmental quality program protects desert, Army readiness

by Deborah Elliott

At one point in their career or another, many U.S. Army soldiers spend 28 days at the National Training Center at Fort Irwin, California, receiving the best force-on-force and live-fire training the U.S. Army has to offer. The training prepares them to perform their work - to fight and win the nation's wars - with maximum impact and a minimum of error and casualties. To make sure that the opportunity to train realistically continues to be available to our soldiers, environmentalists at Fort Irwin implemented an extensive environmental quality program that is recognized at the highest levels of the Pentagon as one of the finest being conducted by the Army today.

Fort Irwin encompasses over 1,000 square miles of arid basins, dry lakebeds, ridges and mountain ranges in California's Mojave Desert. Approximately half of this area is restricted from training due to various logistical, physiographic, cultural and environmental concerns. If the number of restrictions increases, the National Training Center will not be able to offer the level of realistic training that has made our Army the exceptional force that it is.

That's why environmental professionals at Fort Irwin are committed to conserving and caring for the natural resources under their stewardship. They are controlling and managing solid waste; saving millions and millions of gallons of water every year; and improving the quality of air and water. As a result, Fort Irwin's waste, air and water programs have not received a single notice of violation from the Environmental Protection Agency in five years.

Because of its environmental ethic, Fort Irwin received the Army's highest recognition for environmental stewardship, the fiscal 2001 Secretary of the Army Environmental Award for Environmental Quality — Non-industrial Installation, during an April 30 ceremony at the Pentagon. A panel of non-military and Army environmental quality experts, including representatives from the Environmental Protection Agency and the Office of the Federal Environmental Executive, judged competitors for the Environmental Quality – Non-industrial Installation award.

"Fort Irwin has very impressive waste and water management programs," said Juan Lopez, Chief of Staff from the White House Task Force on Recycling, who participated in the judging for the award. "At annual water savings of more than 40 million gallons and over 40 percent waste diversion rate, the installation has realized significant benefits for both the Army and the environment."

The solid waste program at Fort Irwin not only met but also exceeded the DoD goal of a 40 percent diversion of all solid waste generated by the year 2005. It has also exceeded the California requirement to reduce the 1990 baseline disposal of non-hazardous solid waste by 50 percent by the year 2000. Solid waste is diverted from the landfill and processed through the installation recycling and composting facilities. In

fiscal 2001, Fort Irwin realized a 400 percent increase in recycling and avoided \$430,000 in landfill fees, and 1,800 tons of sewage sludge and 40,000 cubic yards of waste wood were processed at Fort Irwin's state-ofthe-art composting facility. Previously, these waste streams were disposed in a landfill at the cost of \$178 a ton.

More than money has been saved at Fort

Irwin, where the most precious commodity in that desert community is water. Simply by changing the type of membrane used in its water filtration process, Fort Irwin is saving almost 33 million gallons of water per year. An additional 11 million gallons are saved due to advanced oil water separators and multiple filters the installation has installed in its new closed loop wash rack system used to clean tactical vehicles.

The dust generated by the vehicles during training exercises was, until 1998, a significant air pollution issue for Fort Irwin. Since mitigation efforts including extensive paving, laying of rock cover and re-vegetation by seeding and planting shrubs and grasses in high traffic areas have been incorporated to control fugitive dust, the air quality at Fort Irwin has improved dramatically. The Mohave Desert Air Quality Management District has awarded the National Training Center with its Exemplar Award for three consecutive years, from 1999–2001.

POC is Deborah Elliott, (410) 436-1654, e-mail: deborah.elliott@aec.apgea.army.mil



A partisol air sampling machine in use at Fort Irwin. Photo courtesy of Fort Irwin



# Secretary of the Army recognizes Fort Lee for environmental quality program

by Deborah Elliott

As home of the Army's state-of-the-art petroleum training facility, Fort Lee is responsible for training over 2,500 soldiers and Marines annually in the proper use, storage and transport of petroleum, oil and lubricants. With the constant rotation of soldiers to and from the installation, the risk of spills or hazardous material accidents is relatively high at the facility.

Being located in the Chesapeake Bay watershed and subject to stringent requirements for wetlands protection and erosion control, Fort Lee faces complex legal compliance. Several programs managed by the U.S. Army Combined Arms Support Command Environmental Management Office serve as mission multipliers for the installation and contribute directly to maintaining environmental compliance at Fort Lee and across the Army.

Because of the success of its environmental stewardship and training programs, Fort Lee and the U.S. Army Combined Arms Support Command received the Army's highest recognition for environmental programs, the fiscal 2001 Secretary of the Army Environmental Award for Environmental Quality – Team. The award was given during



A veterinarian checks the wing of an eagle found on Fort Lee.

an April 30 ceremony at the Pentagon. A panel of non-military and Army environmental quality experts, including representatives from the Environmental Protection Agency and the Office of the Federal Environmental Executive, judged competitors for the Environmental Quality — Team award.

"The U.S. Army Combined Arms
Support Command and Fort Lee have postured themselves for environmental management performance well into the next century," said Juan Lopez, Chief of Staff from the White House Task Force on Recycling, who participated in the judging for the award. "They have applied a great deal of well thought out effort and expertise to the problem of balancing military readiness and environmental stewardship."

Fort Lee's environmental management office has implemented quality programs that span the range of compliance, from National Environmental Policy Act (NEPA) compliance to spill prevention and response, and air and water pollution control.

NEPA coordinators have prepared an Environmental Assessment for utility privatization that has become the template for other such documents throughout its Army major command, the Training and Doctrine Command. Training area and range personnel, including all incoming first sergeants and company commanders, are given instruction by the environmental management team. This training enables them to plan and conduct their activities with consideration for compliance requirements. The benefits of this training is evaluated in over 120 project reviews per year, and the effect has been to enhance training activities by allowing for nearly real-time information on impacts to the environment.

Given that Fort Lee stores over onemillion gallons of petroleum for its training mission, the environmental management team's Spill Prevention and Control



A "victim" is removed from a containment area outside a storage tank during a biennial spill response excercise at Fort Lee. Photo courtesy of Fort Lee

Countermeasure Plan provides a mechanism for prompt reaction in the event of a spill. The comprehensive emergency procedure, which has never been needed in a real-time situation, incorporates the expertise and responsibilities of various agencies and activities at Fort Lee to quickly contain and clean up any release of petroleum. Nonetheless, it is exercised twice a year.

The long-term impacts of building construction and systems are also considered by Fort Lee's environmental management team, who have coordinated the Safety Office and the Preventive Medicine Office to ensure that the containment of asbestos during demolition, the incorporation of halon-free fire extinguishers, and proper storage and disposal of CFC-containing equipment support the installation's air quality goals.

Similarly, the environmental management team has developed pollution prevention plans that exceed the Environmental Protection Agency's requirements for land disturbing operations, and participate actively in the Chesapeake Bay program by controlling the use of pesticides, managing stormwater runoff and providing wetlands habitat for several indigenous species, including the largest rookery of Blue Heron on the east coast.

POC is Deborah Elliott, (410) 436-1654, e-mail: deborah.elliott@aec.apgea.army.mil





# Infantry cultural resource management leads way for federal agencies

by Deborah Elliott

Graduating its first infantry class in 1919, Fort Benning, Georgia, has trained infantrymen and officers for every U.S. conflict since World War I. Located just on the outskirts of Columbus and covering more than 184,000 acres, legend at Benning is that the infantry is the heart and soul of the Army. Their motto, "I Am the Infantry, Follow Me!" echoes this.

Fast Fact: The Commander of Fort Benning has formed close governmentto-government relationships with eleven American Indian tribes.

In meeting this readiness mission, Benning plays host to other unique legends...properties such as Native American cemeteries, archaeological sites such as Yuchi Town, and historic districts and buildings such as Quarters One. Like the infantry motto, these cultural resources are reflections of historic leadership and direction, and the Army protects this rich heritage as a legacy that will endure.

"Fort Benning has the total package," said David Guldenzopf, Cultural Resources branch chief at the U.S. Army Environmental Center. "It is a program that can be used as a model by other installations as well as agencies."

Fort Benning received the fiscal 2001 Secretary of the Army Environmental Award for Cultural Resources Management at an Installation during an April 30 ceremony at the Pentagon.

A panel of non-military and Army cultural resources management experts, including a representative from the national Advisory Council on Historic Preservation, judged competitors for this year's Cultural Resources Management award.

"In a time when the military services are seeking ways to reduce building inventory, Fort Benning has been able to identify, preserve and adaptively reuse some of its most significant buildings to meet mission requirements of the installations," said David Berwick, judging panel member and Army affairs coordinator to the advisory council.

In managing the fort's priceless cultural resources, Benning's staff successfully integrates emerging technologies such as Geographical Information System applications, precise curatorial rehabilitation and productive cooperation with eleven federally recognized American Indian tribes, Historic Preservation Officers from Georgia and Alabama and the public.

The cultural resources team recently installed a GIS program called ArcView. It allows the cultural resources management team to develop map layers that identify site locations, surveyed areas, cemeteries, historic structures and historic districts and greatly enhanced the team's effectiveness.

Once located, over 800 cubic feet of historic and prehistoric artifact collections have been housed at the post in a newly-established curatorial facility that can hold up to 2,800 cubic feet of artifacts. Over 100 feet of records such as maps, field notes and drawings were evaluated by a professional curation management center prior to their curation at the Benning facility, and were deemed to be one of the finest collections from a military installation.

Fast Fact: Fort Benning's popular history book titled <u>Fort Benning:</u>

<u>The Land and The People</u>

Is on the Internet at http://www.cr.nps.gov/seac/benning-book/index.htm.

Also during this awards year, and in consultation with 11 American Indian Tribes, Fort Benning requested and received an exception in order to establish a reinterment facility on the post. The facility will be used for the reburial of Native American Graves Protection and



Aerial of excavations of Creek Indian village for expansion of the Black Ramp Aircraft Parking Apron.

Repatriation Act related remains and funerary objects. The fort also received permission to accept historic Indian burials related to the Muscogean (Creek) Nation people from the southeastern states that required a protected location for reburial.

The positive relationships between Benning staff and American Indian tribes on sensitive cultural resource management issues includes the completion of a land exchange with the City of Columbus.

Fast Fact: Check out Fort Benning's web series of Environmental Awareness Lessons at http://www.benning.army.mil/nature.

Along with city officials, representatives from five American Indian nations also signed the historic agreement. This marks the first time provisions related to NAGPRA have been attached to land that will pass from federal to private control. The city will deed to Fort Benning 2,156 acres in Chattahoochee County for 2,124 acres of federal property off Schatulga Road.

David Guldenzopf, Cultural Resources branch chief, U.S. Army Environmental Center, and a judge during this year's competition, affirms that Fort Benning's honor is well deserved. "The public should care about this particular program and its accomplishments because of the scope and nature of the resources," Guldenzopf said.

POC is Deborah Elliott, (410) 436-1654, e-mail: deborah.elliott@aec.apgea.army.mil





# Fort Stewart and Hunter Army Airfield create healthy environment for soldiers

by Jeannie Skillman

Balancing their role as the U.S. Army's premier heavy power projection platform on the East Coast and creating a healthy environment for its soldiers and neighboring communities is proving beneficial to Fort Stewart and Hunter Army Airfield, Georgia.

For their pro-active efforts and well-managed environmental programs, Fort Stewart and Hunter Army Airfield received the fiscal 2001 Secretary of the Army Environmental Award for Restoration at an installation. The installations were honored during an April 30 ceremony at the Pentagon.

A judging panel of experts from the Department of Defense and other federal agencies nominated Fort Stewart and Hunter Army Airfield for their impressive array of programs and initiatives resulting in the reclamation of approximately 150-acres of land.

"The environmental staff at Fort Stewart and Hunter Army Airfield makes the cleanup program an asset for the Army and the Department of Defense by re-claiming this land and making it available for Army operations and training," said panel member Steven Hirsh, a Superfund work leader for the Environmental Protection Agency. "They have turned an environmental liability into an asset for everyone involved."

Over the past two years, the installation achieved "No Further Action" status for 281 out of 338 underground storage tanks while reducing the costs for completion by nearly \$10 million. By combining pro-active efforts with lessons learned, Fort Stewart is also completing remedial actions well before the Department of Defense goals.

Fort Stewart is located 40 miles southwest of Savannah in southeastern Georgia. Its 279,000 acres makes Fort Stewart the largest Army installation east of the Mississippi. The environmental challenges

are as varied as the terrain, which includes upland forest, forest wetlands and sand hills. Fort Stewart credits the success of its strategies to prioritizing environmental risks according to human health and keeping strong relations with key stakeholders and neighboring communities.

Hunter Army Airfield, home of the Army's longest runway, is located on the southwest side of Savannah and covers almost 5,500 acres. The proximity to four deep-water ports provides additional rapid deployment capabilities for the 3rd Infantry Division (Mechanized). The recently accredited Remedial Borehole Geophysics course offered at Baltimore, New England and Mobile Corps of Engineers Districts has been developed around the investigative efforts performed at Hunter Army Airfield.

"The American public should be proud of the Fort Stewart environmental cleanup program because it reflects a sustainable and sensitive approach to reducing and eliminating any potential health and environmental risk to soldiers and neighboring communities," said panel member Karen Wilson, from the Restoration Team at the Office of the Director of Environmental Programs.

"It's becoming harder to choose a winner each year," added Hirsch, "because more and more Army installations are demonstrating leadership and success in their environmental programs."

POC is Jeannie Skillman, (410) 436-1657, e-mail:

jeannie.skillman@aec.apgea.army.mil

Jeannie Skillman writes for the US Army Environmental Center Public Affairs Office. PWD



Workers at Fort Stewart spread a special sphagnum peat moss to enhance the biodegregiation of petroleumcontaminated soil. Photo courtesy of Fort Stewart



# Bradley Environmental Management Team cited for environmental excellence in weapon system acquisition

by Maria Applin

The Bradley Fighting Vehicle System is 6,700 vehicles strong and an integral part of our national defense. An impressive family of vehicles, the Bradley systems are designed to assist infantry, cavalry, field artillery, air defense, and command and control units in completing their missions.

The Bradley Environmental
Management Team (EMT) functions as a
vital part of the program management for
this significant national arsenal. The
Bradley EMT links highly skilled peacetime
workers, from industrial mechanics to engineers, to support wartime readiness. Team
members ensure that the Program
Management Office of the Bradley Fighting
Vehicle Systems' (PMO BFVS) activities
conform with the Department of Defense
and Army environmental and pollution prevention missions.

Recent achievements of the resourceful Bradley EMT include five major undertakings. The Team prepared the National Environmental Policy Act (NEPA) documentation along with programmatic safety and health evaluations for the Bradley Family of Vehicles. Their research identified and implemented environmentally acceptable alternatives for industrial processes that use hazardous materials and generate hazardous waste. They also incorporated a system engineering methodology into its management and structure.

Additionally, they evaluated potential impacts of certain processes on the environment and recommended both reductions and eliminations. In turn, they investigated the design of Bradley Vehicle Systems with an awareness of potential environmental impacts during manufacturing, re-manufacturing, upgrade, retrofit, testing, operation, and disposal. They also coordinated the preparation of Bradley Fighting Vehicle Systems' A3 Environmental Quality Life Cycle Cost Estimates.

Because of this thorough and proactive approach, the Bradley EMT received the fiscal 2001 Secretary of the Army Environmental Team Award for Environmental Excellence in Weapon System Acquisition.

A panel of experts from the Department of Defense and other federal agencies nominated the Bradley Environmental Management Team for their extensive programs and initiatives.

Don Artis, from the office of the Assistant Secretary of the Army for Installations and Environment, stated, "The public should be very supportive of the Bradley EMT's approach and programs because they result in a weapon system that does precisely what our war-fighters need to help win battles – and with little or no damage to the environment. It's definitely a win-win situation."

Headquartered at Tank-Automotive and Armaments Command (TACOM) in Warren, Michigan, the Bradley EMT includes representative from the Program Management Office of the Bradley Fighting Vehicle Systems, Program Executive Office - Ground Combat and Support Systems, and representatives of a dozen other installations and companies.



Bradley Sunny Tank— Bradley Fighting Vehicle Systems A2 Desert Storm Vehicle.

The Bradley EMT makes sure that pollution prevention and waste minimization are implemented in Bradley vehicle systems. The team also ensures that the manufacturing and rebuilding of Bradley vehicle systems complies with all relevant federal, state, and local laws and regulations.

Using a comprehensive environmental management approach, the Bradley team combines their skills and knowledge in making environmental and pollution prevention decisions. During the past year, the Bradley EMT supported over 100 PMO BEVS, the United Defense Limited Partnership, a prime contractor for integration and manufacturing, with four sites across the country.

The Bradley team includes a broad range of systems engineering specialists with expertise in engineering, logistics, management, and acquisition support. Other team members aid them with proficiency in manufacturing, vehicle integration, maintenance and disposal. Still others reinforce the team's initiatives with overall knowledge of processes and their own perspectives on issues.

The Bradley EMT has executed a robust and proactive environmental strategy. All judges agreed on the Bradley EMT's strong technical merit, and on the team's ability to manage a huge program and show many improvements. The judges' overall assessments made them an excellent nomination for Environmental Excellence in Weapons Systems Acquisition.

POC is Maria Applin, (410) 436-1645, e-mail: Maria.applin@aec.apgea.army.mil

Maria Applin writes for the US Army Environmental Center Public Affairs Office. PWD



# Texas wildlife biologist provides natural resources haven amid heavy fire

by Deborah Elliott

Located in central Texas, Fort Hood's 340 square miles make up an armored training installation on which the Army hones its warfighting readiness through intense exercises. Fifty-two battalions call Fort Hood home. So does the III Corps — the Army's premier heavy-armored division — and the historic 1st Cavalry Division, which boasts a 78-year history as the first full cavalry division of the Army.

Within this atmosphere of intense military operations, with more than 130,000 acres in use for combat training operations, John D. Cornelius developed a natural resources program that has gained him recognition throughout the wildlife community. He created a sanctuary for some of Fort Hood's littlest creatures, and in doing so preserved the land the Army defends.

Because of his environmental ethic, Cornelius received the fiscal 2001 Secretary of the Army Environmental Award for individual Natural Resources Conservation during an April 30 ceremony at the Pentagon.

A panel of non-military and Army natural resource experts, including representatives from The Nature Conservancy, the U.S. Fish and Wildlife Service, and the International Association of Fish and Wildlife Services, judged competitors for the Natural Resources Conservation award.

The terrain of Fort Hood is characterized by valleys, buttes and mesas, and supports a variety of birds in the oak-juniper, mixed and grassland habitats. Three of these resident avian are on the endangered species list – the golden-cheeked warbler, the black-capped vireo and the bald eagle.

Cornelius' oversight of a successful recovery program for the golden-cheeked warbler and the black-capped vireo have made Fort Hood the largest single landowner and manager for both species. In actively working within the military and civilian communities of central Texas, Cornelius promotes understanding of the two endangered songbirds and gains critical support for other wildlife issues.

"John Cornelius is at the forefront of endangered species program management, and has been the driving force behind Fort Hood's innovative program," said Jeanette Gallihugh, U.S. Fish and Wildlife Service biologist and judge on this year's awards panel.

"Additionally, he has developed partnerships and cooperative efforts internally to create an effective natural resource management program at the fort that enhances training capabilities," Gallihugh said.

His cooperative agreement with The Nature Conservancy provides a clear, cost-effective way to implement adaptive management techniques to resolve complex issues, Gallihugh said. "He has also developed a cowbird (parasitic species) control program that has become a national model," she said.

Cornelius succeeded in securing con-

tinued funding for endangered species study and management by clearly demonstrating that taxpayer money will be effectively used to integrate U.S. Army mission needs with endangered species laws and regulations.

Creating effective partnerships with other govern-

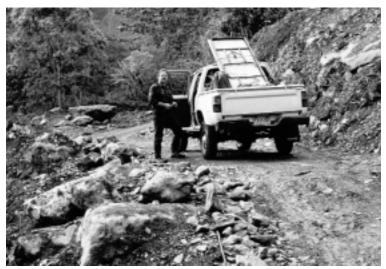
mental organizations, environmental groups, universities and private landowners, Cornelius advanced scientific knowledge of endangered species on Fort Hood, and shared information and study results with concerned stakeholders.

"John Cornelius has developed a program for the recovery of the black-capped vireo and the golden-cheeked warbler that allows for the conservation of our resources and the continuation of the Army's mission," said Jim Bailey, judging panel member and biologist at Aberdeen Proving Ground, Maryland.

"The Secretary of the Army
Environmental Award is a significant win
for the environmental stakeholders because
it demonstrates the bridge between the
environmental and military communities,"
Bailey said. "The public should care about
this award because Cornelius' leadership in
endangered species management sets the
standard for the entire field," Bailey said.

POC is Deborah Elliott, (410) 436-1654, e-mail: deborah.elliott@aec.apgea.army.mil

PWL



 ${\it John Cornelius Inspects golden-cheeked warbler\ wintering\ grounds\ in\ Guatamala.}$   ${\it Photo\ courtesy\ of\ Fort\ Hood}$ 



# George Gricius develops Installation Action Plan to streamline communication

by Jeannie Skillman

The work of one person helps to make a billion-dollar difference in the Army's environmental cleanup program.

George Gricius, Installation
Restoration Program Manager at U.S. Army
Forces Command, developed an Installation
Action Plan (IAP) and workshop that
streamlines communication between stakeholders and regulators. The IAP and workshop identify past, current and future activities for all restoration sites at an installation.

This highly effective and clearly laidout model has led to an estimated cost avoidance of \$1 billion across U.S. Army Forces Command (FORSCOM), Army Materiel Command (AMC) and U.S. Army Reserve Command (USARC) by accelerating the cleanup process and reducing the costto-complete requirement. In honor of his contribution, Gricius received the fiscal 2001 Secretary of the Army Environmental Award for Restoration for an Individual or Team during an April 30 ceremony at the Pentagon.

A panel of experts from the Department of Defense and other federal agencies, nominated Gricius for his pioneering role in improving environmental cleanup plans and building key relations across major Army commands, Department of Defense regulators and the community.

"George may be an individual, but the work he has done has affected every Army installation with a cleanup program," said panel member Steven Hirsh, a Superfund work leader for the Environmental Protection Agency. "The installation action plan he initiated is now being used Armywide and is very commendable."

"His efforts to institutionalize
Installation Action Plan Workshops as an
Army model has reduced of millions of dollars of the Army's cost-to-complete and generates good working relationships with regulatory and community stakeholders
throughout the nation," added panel member Rick Newsome, Assistant for
Environmental Restoration, Office of the
Deputy Assistant Secretary of the Army
(Environmental Safety and Occupational
Health).

An Air Force retiree, Gricius has served as the Installation Restoration Program Manager at U.S. Army Forces Command since 1992. In July 2001, he added the duty of Chief of the Environmental Division for the U.S. Army Reserve Command.

He has received numerous awards for his environmental efforts. Most recently,



George Gricius joins a helicopter tour of Fort Bragg for an EPA-sponsored Tier II meeting. Photo courtesy of Fort Bragg

Gricius was honored by Environmental Protection Agency Region 8 for his role in spearheading the cleansup of contamination at Fort Carson years earlier than projected.

Besides overseeing the restoration program at all active FORSCOM installations, Gricius also organizes and facilitates approximately 47 IAP workshops for FORSCOM, USARC, and AMC. By following the IAP workshop methodology, FORSCOM will have all site response complete or a remedy in place by the end of 2011, three years ahead of the scheduled Defense Program Guidance goal of 2014.

POC is Jeannie Skillman, (410) 436-1657, e-mail: Jeannie.Skillman@aec.apgea.army.mil



# Lake City AAP honored for its "green" bullets

by Maria Applin

What helps to ensure that the soldiers of the United States are well trained while the environment remains protected? The "green" bullet, of course.

Remarkable innovations in these leadfree tungsten bullets have helped to reduce hazardous and solid waste generations associated with small arms and pyrotechnic ammunition production. Combined with a robust installation pollution prevention program, such remarkable strides have landed the Lake City Army Ammunition Plant the fiscal 2001 Secretary of the Army Award for Pollution Prevention at an Industrial Installation.

The only active small caliber ammunition manufacturing facility within the Department of Defense, Lake City AAP has indeed prospered in the past year. Their assistance with "green" bullets addresses the need to protect the environment while ensuring that soldiers receive the training required to survive on the battlefield.



When the Army initiated the "green" bullet project, Lake City AAP tested several alternatives of environmentally friendly bullet materials. The Army selected tungsten, a resilient metal used in light bulbs and cutting tools, to replace lead. Suitable for combat, these bullets reduce environmental compliance burdens on many small arms ranges across the country. "Green" bullets are environmentally safe and perform comparably to lead bullets, and are the wave of the future for small arms munitions.

Today, Lake City AAP churns out about 340 million rounds annually, enough to meet the Army's training and wartime stockpile requirements. Based on an estimated 2,000 tons of lead per year fired by U.S. service members, the estimated cost of removing hazardous lead contaminants from ranges is \$19 - \$58 million dollars. The cost to imple-

ment the "green" bullet project was about \$2.2 million. This new innovation will save millions of dollars by minimizing environmental compliance impacts on training and on costly cleanup efforts.

Other significant pollution prevention projects at the Lake City AAP include the reduction of Toxic Release Inventory and off-site transfers by 55 percent, hazardous waste generations by 80 percent, and solid waste generations by 51 percent.

Additionally, Lake City AAP completed a plant-wide lighting retrofit and upgrade that significantly reduced their annual electrical usage and cost. They also continued a highly successful recycling program, generating a total of 3,756 tons of material. This massive recycling effort included paper, cardboard, brass, and copper. Lake City AAP also began a program to re-sell scrap ammunition and fired cases that should result in about 194 tons sold for re-use instead of being incinerated on-site.

A panel of non-military and Army pollution prevention managements experts, including representatives from U.S. Army Environmental Center, the U.S. Army Corps of Engineers, the U.S. Coast Guard and the Office of Environmental Policy at the Pentagon, judged competitors for the Pollution Prevention Award.

According to Kurt Preston, from the Office of Environmental Policy at the Pentagon, "The Lake City people should be proud of their many pollution prevention

accomplishments. They deserve a pat on the back for getting both production and environmental people looking at total life cycle costs and production changes."

Lake City AAP is a government-owned, contractor operated military industrial installation under the jurisdiction of the U.S. Army Operations Support Command and operated by Alliant Lake City Small Caliber Ammunition Company. Alliant employs 941 people, including 21 employees from the Department of the Army.

Encompassing nearly 4,000 acres of land in Jackson County, Missouri, the area consists of rolling hills traversed by broad stream valleys and flood plains of the Missouri and Blue Rivers and Lake City Valley. Seven miles of undeveloped rural land separate the plant from the more densely populated areas of Independence.



Lake City Army Ammunition Plant is the only active small caliber ammunition manufacturing facility within the Department of Defense. Photo courtesy of LCAAP



# Arizona Guard Ecobuilding Team wins EPA award

The construction of an environmentally self-sustaining office building for the Arizona National Guard earned recognition in the third annual Environmental Protection Agency Region 9 awards ceremony December 7, 2001, in San Francisco, California.

The Ecobuilding Team was one of 31 western organizations and individuals to receive a plaque from EPA Regional Administrator Wayne Nastri in recognition of efforts to protect and preserve the environment in the year 2000.

"Today's honorees have applied creativity, teamwork and leadership in addressing many of the west's most pressing and complex environmental problems," Nastri said. "Thanks to the efforts of these individuals, our air, water and land will be cleaner and safer for generations to come. The winners set an example for all of us to follow."

The Ecobuilding Team is finishing construction of a completely environmentally self-sustainable, 5,200 sq. ft. office building in Phoenix. The building is constructed with many recycled materials and includes:

- 11- kilowatt solar array for electrical loads.
- Roof design and storage to harvest 28,000 gallons of water annually.
- Closed-loop biological wastewater treatment system adjacent to the building.
- Energy-efficient commercial daylighting (systems using the sun) and indoor lighting.
- Radiant barriers to impede heat gain.
- Thermal mass to regulate interior temperatures.
- Combination of underground cooling

tubes along with an air-to-water heat exchanger that uses water cooled by evaporation and deep space radiation for air conditioning.

The EPA Region 9 Environmental Awards program acknowledges commitment and significant contributions to the environment in California, Arizona, Nevada, Hawaii, Guam and tribal lands. Thirty-one groups and individuals were selected from 100 nominees received this year from businesses, media, local, state and federal government officials, tribes, environmental organizations and citizen activists.

POC is Mark Mahoney, (303)-844-0957, e-mail: mmahoney@rma.army.mil PWD

(Extracted from an EPA press release.)

(continued from previous page)

Along with Lake City AAP's environmental management approach that emphasizes environmental quality, pollution prevention, and recycling, Lake City's administrative controls help to ensure their environmental successes. A procurement team of purchasing, materials, safety, and environmental professionals enforces these controls.

For example, the Purchasing Department does not allow chemical purchases without documentation of the chemical approval process; and when excess chemicals are identified, the Materials and Purchasing groups aggressively pursue either returning the chemicals to the vendor, using them elsewhere on the site, or disposal. Environmental teams then review all SOP's for environmental impact, compliance, and pollution prevention opportunities.

The Lake City AAP Environmental Team has demonstrated how a robust program of environmental alternatives can be implemented with sound and cost-effective decisions. Assistance in the development of the "green" bullet has helped to enrich Lake City AAP's mission, while at the same time, has extended far beyond Lake City and the Army, since this initiative alone will help to sustain training exercises at hundreds of DoD facilities.

Pollution Prevention, Compliance, Acquisition and Technology Implementation Chief, Jim Arnold, of the U.S. Army Environmental Center, said, "The magnitude of the Lake City Army Ammunition Plant's program in terms of contributing to the readiness of the Army is second only to transformation. Their program will actually directly support transformation by helping sustain live fire training and testing."

POC is Maria Applin, (410) 436-1645, e-mail: Maria.Applin@aec.apgea.army.mil

PWD

## Submit your articles and photographs to the Public Works Digest

Department of the Army
US Army Corps of Engineers
Directorate of Military Programs
Installation Support Division
ATTN: Editor,
Public Works Digest,
CEMP-IS
441 G Street, NW
Washington, DC 20314-1000
Phone: (202) 761-5778 DSN 763
Fax: (202) 761-8895
e-mail: alex.k.stakhiv@hq02.usace.army.mil



# One year later—the Fort Bragg Sustainability Program

by Lynda S. Pfau

One year after the Environmental Sustainability Executive Conference, the Fort Bragg Sustainability Program continues to gain momentum

"At the initial conference, stakeholders broke into working groups to examine issues concerning energy, buildings, air quality, water supply, water quality, materials and procurement, and training areas to develop 25-year goals for Fort Bragg", said

Dr. Christine Hull, Long-Term Sustainability Planner. "The outcome of the Executive Conference was 10 strategic goals specific to Fort Bragg that are aimed to meet the mission of combat readiness, and minimizing our environmental footprint while maintaining environmental stewardship."

Phase Two of the Fort Bragg Sustainability Program was implemented immediately following the Executive Conference. Goal Team Leaders were chosen from within the installation's components, and trained in the concept of sustainability. Goal Teams then convened to validate goals, identify additional stakeholders and establish short, intermediate and longterm objectives.

"Our initial Five-Year Resource Plan is near completion," said Hull. "This plan will detail areas where integrated planning will be merged with existing Army and Fort Bragg projects and programs as well as track the progress of each of the objectives for the 10 strategic environmental goals."

Although still in its infancy, the Executive Conference and subsequent sustainability training have reaped early successes.

With the large amount of construction, demolition and renovation at Fort Bragg, a tremendous amount of solid waste material is generated. Innovative and "green" thinking generated new uses for hundreds of tons of material that otherwise would have been buried in the landfill. For example, over 132,000 tons of concrete from demolition

projects was ground and found new use as roadbeds, trail bases and in range refurbishing projects; approximately 140,000 tons of excavated earth were also diverted to range erosion projects; and trees removed for construction were converted to more than 4,800 tons of mulch.

"Increased emphasis on waste management and landfill diversion, combined with the innovated thinking of our goal teams, helped us achieve a 55 percent landfill diversion rate for the first six months of this fiscal year," said Paul Wirt, Chief, Environmental Compliance Branch. "That is a significant increase from the usual 18-20 percent diversion rate."

In October 2001, Fort Bragg instituted curbside recycling for more than 5,000 Army family housing residents.

"In the first month of curbside recycling, more than 12 tons of recyclable material was collected," said Wirt. "From October 2001 to February 2002, more than 48 tons of newsprint and magazines, 25 tons of cardboard, 2 tons of aluminum and 9 tons of plastic have been collected."

Over the last year Fort Bragg successfully leveraged funding for several other projects directly related to these strategic goals. The Installation Design Guide is being updated to incorporate and reflect SPiRiT's sustainable design standards for construction, renovation and demolition. An innovative storm water management project is scheduled for design and construction in 2002, as well as a project to evaluate and monitor sedimentation in watersheds located in the training areas. This project also will assess use impacts and measure corrective actions for erosion control projects in order to prioritize available resources in the highly erodable soils of the Sandhills. A feasibility study was initiated for reclaiming more than two billion gallons of treated wastewater discharged annually for use as non-potable irrigation.

In addition, the installation's engineers have begun including the SPiRiT standards

in requests for proposals (RFP) for designbuild construction. Future projects include, but are not limited to, design and construction of a demonstration "Green Building" and development of a mulching program to divert trees and limbs from the landfill. Integration of existing environmental education and training programs will increase community awareness and stimulate participation.

"The Fort Bragg Sustainability Program demonstrates how military installations can influence their own destiny through collaboration and active participation in identification, goal development and implementation of sustainable practices," Hull said. "Regional and community sustainability planning gives the military a unique opportunity to stand with community planners and developers to present the needs of the installation and importance of mission readiness - and to ensure that our communities have productive futures as well. Fort Bragg demonstrates its commitment to continue to set the standard for this initiative in resources. time and leadership dedicated to this effort."

For more information on the Fort Bragg Sustainability Program, please contact Dr. Christine Hull at 910-396-3341, ext. 351.

Lynda S. Pfau is the Environmental Resource Coordinator at Fort Braga. PWD





Grinding trees downed for construction into mulch helped Fort Bragg achieve a landfill diversion rate of 55 percent over a six-month period.



# Fort Lewis' conservation measures help during energy crisis

by Barbara L. Sellers

Power - it's something everyone wants. It's also something people could go without, unless consumers continue to explore and take energy-saving measures.

That's why Governor Gary Locke met April 18 in Seattle with representatives from Puget Sound area utilities to promote a Renewable Energy Program. In addition, Locke congratulated representatives from the various utilities for their outstanding energy conservation efforts during last year's energy crisis.

"Tacoma Public Utilities invited me to go with them to that event because we have been such strong supporters of Tacoma Power during the energy crisis," said COL Richard Conte, Director of Public Works.

After a severe drought depleted the Northwest's normally abundant water supplies to generate hydroelectric power, area utilities were forced to buy power from outside the region, causing gas and electric costs to skyrocket.

During that time, Tacoma Power's Superintendent Steve Klein briefed all major customers, including Fort Lewis about the serious negative impact of the energy crisis. After the briefing, Klein said he was overwhelmed by Conte's response.

"He immediately adopted the attitude, 'we're in this together; what can Fort Lewis do to help?" Klein said. "By using COL Conte's strong words, I was able to get other customers to adopt the same kind of helping attitude.

"I just can't say enough good words about the positive approach COL Conte and his entire staff have embraced toward taking good care of the environment," he added. "Historically, I've always been impressed with the overall cooperative spirit displayed by Fort Lewis and its continuing efforts to be a good neighbor."

As a result of those efforts, state and utility officials lauded Fort Lewis as a model for others to follow.

"When you talk to Tacoma Power, vou realize that over the years, Fort Lewis has done a lot to become more energy efficient," Conte said. "We've got a lot of things we can still do, but we reduced our average energy consumption by 10 percent dur-

ing the peak months and that helped Tacoma Power a lot."

Besides helping to prevent rolling brownouts or blackouts, he said Fort Lewis set a good example for other utility customers to follow.

We played a very important role (during the energy crisis), but it's the people who live and work at Fort Lewis who really saved that energy through conservation measures," Conte said. "We did make the effort to set the example; we reduced security and safety lighting to demonstrate to folks our commitment to energy conservation ... and the people followed suit by reducing the lighting in their homes and generally reducing the amount of power used."

In appreciation, Tacoma Power presented Fort Lewis with a lot of energy-saving devices, such as florescent lights and vending misers.

"When installed in vending machines, vending misers save a lot of energy," Conte said. "We have 2,000 to 3,000 vending machines on Fort Lewis. Vending misers have a sensor on them so the vending machine light only comes on when somebody approaches it (instead of staying on 24-hours a day). So it saves a lot of energy."



Washington Governor Gary Locke (third from left) promotes a Renewable Energy Program in Seattle April 18. CO. Richard Conte (in uniform) Director of Fort Lewis Public Works, attended the event as Tacoma Power's guest of honor.

He said a number of booths were available at the event for people to signup for renewable energy and to be participants in that program.

"Governor Locke is asking folks to contribute to an effort to increase the amount of renewable energy that we're using here in the Northwest," Conte said. "By renewable energy, we mean things like wind power, solar power, geo-thermal power or any power generated where there's minimal or no environmental impact."

Other types of renewable energy are currently being explored in different parts of the country, he said.

"This program is (geared toward) making less of an environmental impact from the generation of power and to make consumers less dependent on fossil fuels," Conte said.

Besides being in limited supply, "fossil fuels are also significant pollutants. They create a lot of pollution when they're converted, both from the extraction process of getting them out of the ground and then burning them."

Using devices that will make systems more efficient, and reduce power load, also helps to conserve energy. That's why Public Works has been installing energy-efficient lighting fixtures.



## Fort Carson reuses tank track to harden water crossing

by Susan C. Galentine-Ketchum, Gwyn L. Howard, Heidi R. Howard, and Malcolm McLeod

In 1998, several thousand pounds of

used tank track from DRMO was used to

reinforce B Ditch along Landfill 5, located

Fort Carson, Colorado, has teamed with HQ USACE and the Engineer Research and Development Center (ERDC) to find innovative reuses for old or unserviceable tank track in several erosion control projects. Since tank track is composed of rubber fused to iron, making it unfit for the recycling process, millions of pounds of track each year occupy valuable yard space at the Defense Reutilization and Marketing Office (DRMO) or are landfilled at great cost to the Army.

at the northeast end of the cantonment area at Fort Carson. After promising results there, a more recent project using "recycled" track was proposed to construct a hardened water crossing at the far east end of Landfill 5.

ERDC's Construction Engineering Research Laboratory (CERL), in conjunction with the Directorate of Environmental Compliance and Management and contractors, built the crossing in January 2002. With funding from HQ USACE Environmental Division, the hardened water crossing will serve as part of a research study on using the unserviceable tank track for erosion control applications.

Fort Carson is the first Army site to have such a crossing built. In studying this application, CERL's interests are twofold:

(continued from previous page)

"Actually, Fort Lewis is one of the most energy-efficient installations in the Army, already," Conte said, "(But) we continue to look for ways to save energy. Eventually, we would like to get to a position where people can be very comfortable and work efficiently without having to take extraordinary measures to save power, but folks still need to do the basic things."

Some examples of ways people can help save energy include:

- Turn lights off when they are not in use:
- Turn computers off at night;
- Maintain home temperatures at reasonable levels during the day (and set back the temperature at night when sleeping);
- · Don't use electric heaters; and
- Use compact florescent lights.

"Compact florescent lights are expensive, but they last longer and are much more efficient," Conte explained.

"Computers also consume a lot of energy when you consider the number of computers we have on post," he said. "Although there's a lot of energy-saving devices on computers these days, they're still drawing power." If someone has a heating system that does not provide adequate heat, he said it should be reported so it can be fixed because portable heaters consume huge amounts of energy.

Conte also talked about a 25-year plan.

"We have a 25-year goal to be using exclusively renewable types of energy," he said. "Basically, we'd like to be energy independent by 2025. Energy independent, meaning exclusively renewable energy sources."

He said it can either be locally generated by such things as fuel cells (a new technology), or other renewable forms of energy that don't rely on fossil fuels, and for that reason, are less subject to price fluctuations.

With all the wonderful conservation measures Fort Lewis has taken, "we still need to improve our water consumption," Conte said. "Our water consumption on Fort Lewis is more than twice the average per-capita water consumption in the city of Seattle. We use more water per person. The biggest thing is to be cognizant of the fact that water is a valuable resource and it's not something to be wasted."

He said the biggest consumption of water on post comes from irrigation - watering the grass.

"We do a lot of it on post to maintain the appearance of the post, not just our

yards, but the parade field and other pride areas," Conte said. "So we're looking for ways to try to make that more efficient and reduce the amount of water we consume. We would (also) like to see people reduce the frequency in watering their lawns, and reduce the amount of hot water used."

When the area suffered drought conditions, Conte said people voluntarily responded by reducing the amount of water they were using to water their yards.

"As a result, that produced a significant reduction in water consumption," he said. "During our peak irrigation season, we were able to reduce our water consumption by nearly 3 million gallons a day (from 11 million gallons a day to 7.8 or 8 million gallons a day)."

Although that's still very high, reducing it that much helped significantly, he said.

"I've been very impressed with the fact that without imposing restrictions, and with very little urging, people at Fort Lewis have been very conservative-minded," Conte said. "We need to continue with those efforts."

POC is Barbara Sellers (253)-967-0172, e-mail: barbara.sellers@mail.tulnet.com

Barbara Sellers is the senior writer for the <u>Northwest Guardian</u> at Fort Lewis, WA.





# Fort Drum's antifreeze recycling and fuel blending programs save money, prevent pollution

by Karen J. Freeman

Each year, Fort Drum supports the mobilization and training of nearly 80,000 troops, including those from the 10th Mountain Division (Light Infantry), National Guard and Army Reserves. It is the role of the Environmental Division, Public Works, to strike a healthy balance between providing the 10th Mountain Division with the training support they require, while at the same time, minimizing harmful impacts to the environment.

"Being a sound environmental steward is an important part of Fort Drum's mission," said Jim Haynes, Chief of the Environmental Division. "Our pollution prevention (P2) program is continually evaluating new methods and processes that are more friendly to the environment by reducing the amount of hazardous waste produced by the installation."

#### **Antifreeze Recycling Program**

In April of 2001, the Environmental Division's P2 program implemented an antifreeze recycling program that not only saved the installation money, but also reduced the amount of hazardous waste disposed of by Fort Drum.

Per the Army's Hazardous Waste Minimization (HAZMIN) Policy, all Army installations must reduce the quantity and toxicity of hazardous wastes generated by antifreeze products. Ethylene glycol-based antifreeze, which is used in most military ground vehicles and accounts for approximately 90% of the antifreeze utilized on Fort Drum, may be recycled rather than disposed of, reducing the costs of disposal as well as enhancing raw material conservation.



Used motor oil collected in a tote (on left) is blended with fuel siphoned from the vehicle. After being combined together, the fuel and recycled motor oil mixture is returned to the vehicle fuel tank. Photo by Tony Rambone

Each motor pool on post collects used ethylene glycol-based antifreeze during regular vehicle maintenance. When a 55-gallon drum is full of used antifreeze, a hazardous material/hazardous waste (HM/HW) technician from the Environmental Division collects the drum for recycling rather than disposal.





Top — Water crossing before placing the recycled tank track hardening.

Bottom — Construction of the recycled tank track hardened crossing.

(continued from previous page)

to reuse the tank track headed for a landfill or DRMO. to improve upon the initial use of the tank track at the site in a way that does not contribute to erosion, yet expands the list of reuses of the area for vehicle and pedestrian traffic.

The main goal is to build a stable, hardened stream crossing able to withstand traffic pressures and watershed impacts, and resist erosion. The tank trail and stream crossing in that area services many users including permanent and reserve unit traffic, trainers exercising police dogs, physical fitness training, etc.

To build the crossing involved excavation of existing concrete, rubble, riprap and soils to prepare the site for a proper crossing. The crossing consists of 44 strips of used tank track, each weighing about 1,600 pounds, and is 20 feet wide by 100 feet long. Cable, also salvaged from the DRMO yard, holds the tank strips together.

Lessons learned from the project will be published as a Public Works Technical Bulletin through HQ USACE to inform DPWs across the Army on how unserviceable tank track can be recycled for projects on their installations. In addition, a presentation entitled "Reuse of DRMO materials for LRAM projects" will be given at the 2002 ITAM meeting in Savannah, Georgia, and the report will be available through CERL's SEDSPEC program, a webbased decision support system for erosion control technologies.

For more information, please contact Gwyn Howard at CERL, 800-USA-CERL, ext. 7638, e-mail: Gwyn.L.Howard@erdc.usace.army.mil.

Susan C. Galentine-Ketchum is a DECAM writer at Fort Carson, Gwyn L. Howard is a research biologist at CERL, Heidi R. Howard is a natural resources specialist at CERL, and Malcolm McLeod is a chemical engineer at HQUSACE.



The recycling process is not complicated or time-intensive, said Tony Rambone, P2 project manager.

A recycling unit acts as a distiller and boils the sludge and water from the ethylene glycol, separating it into 55-gallon drums. The 'distilled' antifreeze is then treated with an inhibitor to bring it within the required military specifications. The end recycled product is equivalent in performance and chemical compatibility with virgin military antifreeze CID-A-A-52624.

The entire recycling process takes 20-24 hours to complete.

Samples from each drum are sent to the Petroleum Test Facility in Pennsylvania for testing, which takes about two weeks on average, said Rambone. Once the antifreeze meets mil specs, the drums are delivered to Fort Drum's Hazardous Material Control Center (HMCC) to be issued, free of cost, to 10th Mountain Division units as well as to the NY/NJ National Guard.

In the one year since the program began, the Environmental Division has collected 141 drums (7,755 gallons) of used antifreeze and given 23 drums of approved recycled antifreeze to the HMCC for issuance. The "free antifreeze" program appears to be well-received by the motor pools.

"We haven't had any complaints about the performance of the antifreeze," said Cliff Lashway, HMCC site manager. "But, initially we received complaints about the color, which was brownish-green rather than the bright green the soldiers are accustomed to seeing."

Each drum is clearly labeled to identify it as recycled product, said Lashway. Furthermore, each drum also contains the analysis showing that the product meets mil specs. The actual color of the antifreeze does not affect functionality or performance.

However, to alleviate concerns about the brown tint, the P2 program purchased dye, which is injected as part of the inhibitor and restores the bright green color to the recycled antifreeze. "If that makes everyone happy, it's simple enough to do and does not add substantial cost to the process," said Rambone.

A transition such as this one takes time. For the immediate future at least, the HMCC will keep 30-40 drums of virgin antifreeze on hand at all times.

"Right now, even though we have two recycling units, we can't produce enough recycled antifreeze to keep up with demand," said Rambone. This is due in part to the ratio of used antifreeze needed to produce recycled antifreeze.

It takes approximately four 55-gallon drums of used antifreeze to make one 55-gallon drum of recycled antifreeze, said Rambone. There is also the time involved to send a sample of the recycled product to the petroleum lab and wait for the test results. There are currently 14 drums of recycled antifreeze awaiting approval from the lab.

"In some cases, the results of the sample test show that the antifreeze does not meet mil spec," said Rambone. "In that case, we can still work with that same drum to get it within spec and send another sample to the lab. It just takes more time."

The benefits of utilizing recycled antifreeze are far reaching. First, there are the cost savings to Fort Drum.

In its first year, the program cost the Environmental Division \$3,9001 to implement. Units benefited by avoiding \$5,100 in virgin antifreeze purchases and Fort Drum saved \$31,600 in used antifreeze disposal, representing an overall net cost savings of \$32,800. During this time period, more than half of the 10th Mountain Division was deployed. Therefore it is reasonable to assume net cost savings to increase as the number of troops training on post multiplies.

In addition to the monetary savings achieved through buying less virgin antifreeze and paying less in disposal costs, there are also benefits to the environment. Recycling antifreeze reduces the pounds of hazardous waste generated and disposed of by Fort Drum and by utilizing recycled antifreeze, Fort Drum helps to conserve the earth's raw materials and natural resources.

#### **Fuel Blending Program**

Buoyed by the success of the antifreeze recycling program, Fort Drum has recently implemented yet another recycling strategy, this time involving used motor oil.

Based on recommendations from the National Automotive Center (NAC) and Tank-Automotive & Armaments Command (TACOM), the U.S. Army has initiated work to implement motor oil reutilization programs Army-wide. Two years of study at Fort Irwin, that included cost/benefit analysis, emissions testing, engine durability testing and field testing, proved that used oil reutilization was a sound waste reduction and cost avoidance initiative.

Selected by the Army as a beta site in March 2001, Fort Drum's P2 program analyzed the feasibility of implementing a fuel blending program to recycle used motor oil on Fort Drum. One year later, Fort Drum officially launched its oil reutilization program.

"We began with two fuel blenders, given to us free-of-charge, for being a beta site," said Tony Taranto, P2 program manager. "However, we launched the program in March 2002 with 11 fuel blending machines in operation at several motor pools on post.

The fuel blending process transforms used oil into usable fuel and subsequently reduces the need for used motor oil collection and disposal. Currently, Fort Drum is only recycling used oil retrieved from heavy mobile multi-purpose wheeled vehicles (HMMWVs) and heavy expanded mobility tactical trucks (HEMTTs) while awaiting approval on other wheeled vehicles.

The process is a simple one, implemented by automotive wheel mechanics onsite at the motor pools, said Taranto. The P2 program is responsible for educating the mechanics on fuel blending and for routine maintenance of the fuel blending machines.

During the process, a tote collects motor oil as it is drained from an engine during maintenance. Fuel is siphoned from the tank directly into the fuel blender where it is combined with the motor oil, filtered to remove any solids, blended together and returned to the vehicle fuel



# Using ferns for arsenic removal at Picatinny Arsenal

by Dr. Steven L. Larson

Scientists at the U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, are developing technology that will use plants to remove toxic chemicals such as arsenic from soils during the normal growth cycle of the plants. Using plants to remediate a contaminated site is an attractive and cost-effective alternative that eliminates the need to excavate and transport large volumes of contaminated material.

Plants that are capable of removing toxic chemicals from soils are called hyper-accumulators, and the process by which the plants clean up contaminated soils is called phytoextraction. Hyper-accumulators are placed in the contaminated area and, as the

root systems develop, contamination in the soil is transferred into the aboveground portion of the plants. The plants are subsequently harvested and the arsenic-laden plant tissues are collected for disposal. By using this method, contaminants can be removed from the soil without disrupting the site, which occurs when excavation techniques are used.

The ERDC study uses ferns that have shown potential for hyper-accumulating arsenic in previous laboratory studies. The study will compare the true cost of remediating contaminated sites with regards to dollars spent on the cleanup, the impact of the technology on existing flora, and aesthetics.



Ferns used in site remediation

The ERDC study will specifically look at the efficiency of using ferns to restore arsenic-contaminated soil at Picatinny Arsenal. Scientists will compare plant density, growth parameters, initial contaminant level, and climate to the rate of contaminant uptake. They will also determine the number of crops required to return the site to background levels of arsenic, and will

(continued from previous page)



Tim Aubin, service technician for Fort Drum's Environmental Division, explains how the antifreeze recycling machine filters out sludge, debris and water from used antifreeze.

tank. The mechanic then replaces the drain plug, changes the oil filter on the vehicle and fills the crankcase with new oil.

It takes one minute per quart of oil to adequately blend with the fuel. Overall, the

process takes approximately fifteen minutes, depending upon the amount of oil being recycled.

First, the fuel value of the oil is recouped by utilizing the used motor oil as fuel. For every gallon of used oil that is blended back into a vehicle, one less gallon of fuel is needed by Fort Drum. "The

cost of two gallons of fuel is saved each time the oil is changed on a HMMWV," said Taranto. "With the number of vehicles in operation on post, that savings will add up over time."

Fort Drum projects pure fuel consumption to decrease, due to this process, by approximately \$61,000 per year (at today's prices).

Additionally, the need for used motor oil collection from these two types of vehicles is virtually eliminated. Therefore, the cost of hazardous motor oil waste disposed of by Fort Drum is reduced proportionately. "Based on the number of oil changes conducted on HMMWVs and HEMTTs last year, we estimate a savings of \$25,000 per year in used oil disposal," said Taranto. "Concurrently, significant cost savings will be realized through reduced management, collection and storage of used oil."

Overall, Fort Drum projects it can achieve cost savings of \$86,000 per year with the fuel blending program.

"This program has only been underway for one month," said Taranto. "It will be 6 months or so before we can effectively gage its success, as well as learn where else on post we can apply the process."

Feedback from the units on the ease of recycling oil, statistics on how many oil changes are actually conducted per year, and the quantity of oil recycled are key bits of information the P2 program seeks. Taranto hopes the program can be expanded to include other wheeled vehicles and perhaps track vehicles as well.

"Overall, both the antifreeze recycling and fuel blending programs are viable means of waste reduction on Fort Drum," said Haynes. "Furthermore, they are environmentally sound cost avoidance initiatives that support the training mission while helping to protect the environment."

POC is Tony Taranto, Pollution Prevention Program Manager, Environmental Division, PW, (315) 772-0353, e-mail: tarantot@drum.army.mil

Karen J. Freeman is a Public Relations Specialist with Adecco Technical in the Environmental Division, Public Works, at Fort Drum, NY.

(See page 32 for update on DoD oil recycling policy.)



## Residents restore Fort Belvoir's Accotink Bay

by Wayne V. Hall

Some 4,000 volunteers turned out Saturday, April 6, to participate in the Alice Ferguson Foundation's 14th Annual Potomac River Watershed Cleanup and removed some 117 tons of trash from nearly 400 miles of Potomac River Watershed land and shoreline in four states and the District of Columbia.

Fort Belvoir shares a part of the Potomac River Watershed along its border with Accotink Bay, and was one of 122 sites that participated in Saturday's cleanup.

More than 50 volunteers here — including members of the Belvoir Bowhunters, Boy Scouts, Girl Scouts and others — braved the wind and cold to pick up some 1,800 pounds of trash and 300 pounds of recyclable materials in the Tompkins Basin area of the post, according to Marcia G. Kicos, a natural resource manager with Fort Belvoir's Directorate of Installation Support's Environmental and Natural Resources Division.

"Each year this event gathers more momentum through greater involvement of volunteers at increasingly more cleanup

(continued from previous page)

perform a cost/benefit analysis to compare excavation and disposal.

ERDC scientists have used ferns to clean up arsenic-contaminated soil at Picatinny Arsenal in a greenhouse laboratory (using soils from Picatinny), and in six test plots at the site. The maximum concentration of arsenic detected on the site is 251 parts per million (or milligrams per kilogram). Fern samples from treat-



Picatinny Arsenal site prior to remediation.

sites," said Michelle Radez, the foundation's cleanup coordinator. This year's cleanup ranged from West Virginia to Pennsylvania, Maryland, the District of Columbia and Virginia.

"This year we concentrated on the removal of illegally dumped tires because of the environmental hazards they pose, such as serving as mosquito breeding grounds," Radez said. "As a result we removed more than 2,300 tires this year, compared to 713 that were removed in 2001."

In the past 14 years, the cleanup effort has removed more than 715 tons of trash from the Potomac watershed. In addition to the tires, volunteers throughout the region hauled in the front end of a mobile home, three I-beams, five refrigerators, 13 mattresses, 19 bicycles, 45 shopping carts, 12 stoves, six lawn mowers, a bag of Barbies, a handgun, three wallets, 40 deer carcasses, a moped and a plastic Jedi sword.

Volunteers here found a variety of interesting items. Items collected here included 10 tires, two fishing rods, 215 balls, a pair of shoes, 1,000 pounds of steel

ment areas ranged from 890 to 2010 mg/kg (average of approximately 1200 mg/kg).

One specific type of fern produced biomass equivalent to about 4.5 tons per acre on average, while others produced lower biomass levels (as low as 2.2 tons per acre). Based on preliminary data from individual plant samples, the estimated decrease in soil arsenic concentration due to biomass harvest and removal will decrease soil arsenic concentrations ranges from 2 to 6 mg/kg during each 12-week growth/harvest cycle.

Data collected to date strongly justify continued testing and demonstration of phytoextraction technology. The ability of the plants to accumulate arsenic at concentrations suitable for site-wide remediation has been proven, along with biomass production rates that would allow significant concentrations of arsenic to be pipes, 100 pounds of concrete, a barrel, a wooden pallet, a car battery and a 5gallon container of oil.

"This cleanup is truly a grass-roots event that happens through the



Greg Fleming and John Cheek, wildlife specialists with Fort Belvoir's Directorate of Installation Support's Environmental and Natural Resources Division, dig up steel pipes. Photo by Catherine Phillips

involvement of hundreds of volunteers through community groups and organizations," said Tracy Bowden, executive director of the Alice Ferguson Foundation, a nonprofit environmental education organization based in Accokeek, Maryland.

POC is Wayne V. Hall, (703)805-3397.

Wayne V. Hall is the editor of the <u>Fort</u> Belvoir Eagle. **PWD** 

removed from the soil. Further field activities will focus on optimizing current techniques so that biomass production and weed control can be increased, and hand labor decreased. A "best practices" plot will be added to ongoing research to evaluate the best available practices on a larger scale.

POCs are Charles R. Lee, (601) 634-3431, e-mail: leer@wes.army.mil; Steven L. Larson, (601) 634-3431, e-mail: larsons@wes.army.mil, ERDC; and James W. Frankovic, (973) 724-6239, Program Manager for Enterprise Development, Picatinny Arsenal, NJ.

Dr. Steven L. Larson works at USACE's Engineering Research Development Center, Environmental Laboratory, Environmental Processes Engineering, Vicksburg, MS. PWD



# Bald eagles build nesting place on Fort Benning

by Laura Martinson

As far as national symbols of patriotism go, Fort Benning boasts the "birdiest." Two adult bald eagles now nestle in their own riverfront resort on the Chattahoochee. The bald eagle was selected as the insignia of the United States June 20, 1782.

Eagles are thought to mate for life, and, for the last eight years, this couple has made the post their home. There are actually two nests, but the original, located in a ravine, has deteriorated with time. The pair recently upgraded to a tall tree overlooking the river.

Sightings of the eagles nesting and fishing on the river are frequent since the eagles prefer areas near water, and they feed on fish.

"It's pretty dramatic to go out there and see them bring in a fish or see the eaglets starting to get bigger and test out their wings," said Pete Swiderick, Conservation Branch chief, Directorate of Facilities, Engineering and Logistics. "That can be a pretty exciting sight."

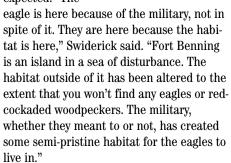
The post's pair has produced at least one eaglet each year for the past eight years. They typically nest from the first of December until the end of May, when the eaglets leave the nest, Swiderick said.

"We've expected the eaglets to come back and make nests, but we've not been able to verify they've done that," Swiderick said. "There occasionally are sightings of three eagles together, including one subadult. But we've not seen more than three together at the same time."

The Conservation Branch's role is to protect the area in which the eagles live during the breeding season. This includes blocking boaters, closing two training areas, locking two gates that access the river, and blocking hunting in that area.

They have even coordinated with Lawson Army Airfield to keep flight patterns no less than 1,000 feet away from the nesting area. The branch's biologist checks on the nest weekly during the nesting season.

There is a connection between the national symbol and the military installation upon which it thrives, Swiderick said, but not one that may be expected. "The



The Chattahoochee River Valley is a good example of high quality habitat for the eagle and several endangered species, Swiderick said. The quality comes as a result of the military's active involvement in a natural resource management program.

"The military provides an excellent habitat for many endangered species," Swiderick said, "and right now those habitats on installations are some of the best that exist."

POC is Elsie Jackson, e-mail: elsie.jackson@benning.army.mil

Laura Martinson writes for the <u>Fort</u>
<u>Benning Bayonet</u>. **PWD** 







# Army and EPA break ground at APG on Earth Day

by Jeannie Skillman

The U.S Army and the U.S. Environmental Protection Agency (EPA) teamed up on Earth Day to complete the restoration solution of planting native and hybrid trees to reduce contaminants in the soil and groundwater on the former waste disposal site known as J-Field at the Edgewood Area of the Aberdeen Proving Ground (APG), Maryland.

"Earth Day is the perfect day to complete the final step of this project by taking a once contaminated area and turning it into a self sustaining ecosystem," said John Wrobel, an Environmental Engineer with the Directorate of Safety, Health, and Environment (DSHE) at APG. "What is most important is that we are able to fix past environmental mistakes naturally and in partnership with Mother Nature," Wrobel said.

Staff from the U.S. Army Environmental Center (USAEC) and the



John Wrobel, an Environmental Engineer with the APG Directorate of Safety, Health, and Environment (DSHE) inspects recently planted Hybrid Poplar Trees at J-Field.

U.S. Aberdeen Test Center (ATC) joined with members of the EPA and DSHE to plant an additional 200 trees to go with the 600 already planted at J-Field. The trees have been scientifically proven to reduce the level of contaminants in the soil and groundwater without causing any harm to the environment. The cleanup has been so successful that it was chosen as the remedy for removing contaminants and bringing back the balance of nature to the area.

"Hybrid trees are quick growing and are successful at intercepting containments before they reach the nearby freshwater marsh," said Steve Hirsh, remedial project manager for EPA Region III. "Recent testing in the area has shown that the trees have directly destroyed up to 60 pounds of chemical solvents," Hirsh said.

The opportunity to join the Garrison command in implementing the restoration project was unique for the people that work

at USAEC and serve as program managers for all of the Army's restoration programs. "It was nice to get out of the office and get down to the ground level, literally, and make a difference in the land," said Randy Cerar, chief of the environmental restoration division at USAEC. "This is a great example of how the Army and their Cleanup Partners have taken a technically complex issue and implemented an environmentally friendly response," he added.

J-Field was identified in the late 1970s as a potentially contaminated site because it had been used to burn decontaminating agents containing solvents and chemical warfare materiel in open pits and, as a result, left behind a residue of lead, arsenic and tetrachloroethane (1,1,2,2-TeCA). It was during the 1970s that the Army began to put environmental issues at the foreground and, as a result, all sites under the jurisdiction of the US

Army that were identified as contaminated were prioritized according to the human health threat and environmental law. The EPA and the Army then developed a systematic approach towards restoring those sites to safer levels.

Through a team effort of key stakeholders, including community involvement, several methods of cleanup were attempted at J-Field before a relatively unknown process at the time, called phytoremediation, was identified in the 1990s as a possible solution. Phytoremediation is the process of using plants to clean up chemical pollution. First, the soil contaminated with toxic metals was removed from the site and, starting in 1995, DSHE began to plant hundreds of trees at a time every two to three years until the culmination of the effort on Earth Day.

According to Scott Fredericks, biologist for the environmental response team of the EPA, J-Field became a pilot study for a natural solution to a man-made problem. "We teamed up with several universities and other experts to thoroughly test the ecosystem and gather scientific knowledge after we had planted the first round of trees at J-Field," said Fredericks. "The results surpassed any expectations we originally had and proved to be safe for the trees and environment and a very effective means of cleaning up contamination," Fredericks added.

"We could all learn something from this project," said Cerar. "By planting trees and plants native to our area, we can help mother nature help us to reduce air pollution, conserve water and restore our environment."

POC is John Wrobel, APG Directorate of Safety, Health and Environment, (410) 436-4840. PWD



# **Erosion control supports Airborne readiness**

by Robert DiMichele

Soil erosion is often considered to be an environmental problem. It can foul streams and wetlands, even destroy habitat. At Fort Bragg, North Carolina, home to the 82nd Airborne Division and many of the Army's special forces, soil erosion is also a training issue.

"Deep gullies caused by soil erosion are a significant hazard for the troops," explained Jennings Craig Lance, soil conservationist at Fort Bragg. "We've had massive erosion in our drop zones and it was affecting the training as well as harming the environment."

Now, that erosion has been stopped by better conservation practices and training lands management.

For many years, Lance said, the common practice was to "disc" the entire drop zone. It was similar to a farmer clearing a field for planting. But the installation didn't plant any vegetation.

"When you take the vegetation off of sandy soil you get erosion. When you have cleared drop zones on top of hills like these at Fort Bragg you get massive erosion," Lance said.

The erosion was so bad on the Sicily Drop Zone that the State of North Carolina issued a notice of violation in 1994. Sand and clay had eroded from the drop zone and fouled nearby streams, filled in adjacent wetlands and threatened the habitat of the endangered red-cockaded woodpecker. Lance said 90 percent of the drop zone's 1,000 acres were eroded at that time.

SFC Patrick Mackery of the 3rd Special Forces Group said he remembers the washouts and gulleys on the Sicily Drop Zone. "We had a lot of ankle injuries, foot trauma, and back injuries, especially at night."

The simple answer to fix the problem was to stop the water from running down the hillsides of the drop zones. But the more difficult question was how to do it.

Lance said the installation divided the drop zone into six sections and prioritized them based on the worst areas of erosion to the least impaired. The approach used was to create a series of terraces on the drop zone and then re-vegetate the site. The size of the terraces depended on the volume of water that particular area had to control but it was important to keep the terraces' slopes very gentle so as not to add a safety hazard for the paratroopers when they landed.

The installation staff used a combination of grasses to vegetate the site. The grasses had to be able to thrive in both sandy and clay soil as well survive North Carolina's hot, dry summer weather. Bermuda grass combined with either rye grain or millet has proven to establish itself quickly and help a permanent cover develop successfully.

"Basically we had to slow the water runoff and improve the infiltration rate," Lance said. "Once the vegetation got established, the gullies disappeared."

He added, "I know the troops are much happier with it. All we hear is positive stuff

when we talk to the drop zone safety officers and jump masters." And, he should know. Lance is a parachute rigger with an Army Reserve unit and has first hand experience with the drop zone.

"HALO jumps need 250 to 500 meters of clear ground. Sicily is now perfect for it. It is now a lot easier to recover off of the DZ," Mackery said.

The Sicily Drop Zone erosion control project was completed this spring after eight years of effort and about \$3 million. Lance summarized the success by saying the project has brought the drop zone back into environmental compliance; and most important, the effort has provided the soldiers of Fort Bragg a safe and effective training site.

POC is Robert DiMichele, USAEC, (410) 436-2556, e-mail: Robert.dimichele@aec.apgea.armu.mil

Robert DiMichelle is the USAEC Public Affairs Officer at Aberdeen Proving Ground, MD. PWD



Fort Bragg drop zone.



# Principles help Corps reaffirm commitment to environment

by Candice Walters

The U.S. Army Corps of Engineers is reaffirming its commitment to environmental sustainability and being good stewards of the environment by implementing its recently published Environmental Operating Principles.

Earth Day, April 22, marked the completion of the first step in the Corps' adoption of the seven principles. A year before, Chief of Engineers LTG Robert B. Flowers challenged the Corps to create a set of **Environmental Operating Principles. On** March 26, at a dedication ceremony for the Davis Pond Freshwater Diversion Project in St. Charles Parish, Louisiana, Flowers unveiled the principles, noting that a chainof-command teaching program, beginning with his division commanders, had begun. The teaching program, which is completed on Earth Day, was designed to ensure that all Corps employees understand the principles and their supporting doctrine so they could begin applying them to all decisionmaking and programs.

Several Corps training courses (for example, the planning curriculum) are being modified to include the Environmental Operating Principles and how they are to be applied in various program areas.

According to Flowers, the principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all activities.

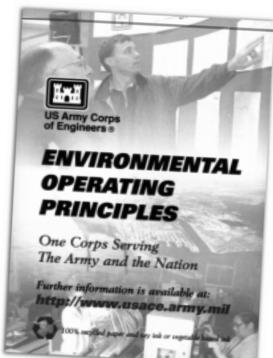
"The Environmental Operating Principles reflect our ongoing efforts to ensure that environmental sustainability is considered in every decision we make," said Patricia A. Rivers, head of the Corps Military Program Environmental Division.

The principles also are consistent with the Army's requirement for its installations

to adopt the Environmental Management System when looking at their missions, activities and functions, she said. Army installations are beginning to implement these systems now as they are required to have an EMS in place no later than December 31, 2005.

# The seven Environmental Operating Principles are:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge
  base that supports a greater understanding of the environment and
  impacts of our work.



 Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

The principles are rooted in the various environmental laws, statutes, and regulations, as well as the Army's four pillars of compliance, restoration, prevention, and conservation, which all govern Corps activities when it comes to the environment.

"We're using them as a base and building up from them," Flowers said.

Information about the principles can be found online at www.usace.army.mil.

Candice Walters is a public affairs specialist at HQ USACE. PWD



## **FORSCOM holds annual Energy Managers Forum**

by Dave Payson

The 2002 FORSCOM Energy Managers Forum (EMF) was held March 12-14 in Phoenix, Arizona. Attending this year's EMF were over 20 participants including energy managers from FORSCOM installations and FORSCOM headquarters in Atlanta, and staff from the Huntsville Corps of Engineers, Assistant Chief of Staff for Installation Management (ACSIM), and Pacific Northwest National Laboratory (PNNL). PNNL provides technical support for the FORSCOM energy program and organized this year's EMF.

The agenda for the EMF reflected topics of current interest, including the latest developments in the Army's Transition of Installation Management (TIM), revisions and refinements to the Headquarters Army DUERS Data System (HQRADDS) and Army Regulation 11-27 (Army Energy Program), the current status and new developments in funding and financing opportunities including Energy Savings Performance Contracting/Utility Energy Services Contracting (ESPC/UESC), installation planning and progress toward meeting Executive Order (EO) 13123 goals, new and emerging energy and water efficient technologies, designing efficiency and sustainability into new construction and major renovation, and a discussion of future directions in FORSCOM energy program implementation.

In addition to the presentations and discussion, the participants toured an award-winning sustainable design facility at the Arizona National Guard at Papago Military Reservation in Phoenix.

The EMF Agenda and all PowerPoint presentations given at the EMF can be found on the recently renovated FORSCOM Energy Program Web site: http://freddie2.forscom.army.mil/nav/G1defa ult.htm. Click on "Programs" under the G1 header and then the "Energy Program" bullet in left margin. Click on the "FORSCOM Energy Program" hot link to access the full

set of features and documents on this web site.

POC is Dave Payson, (509) 375-6417, e-mail: dave.payson@pnl.gov Dave Payson is a Senior Communications
Specialist at the Pacific Northwest
National Laboratory. PWD



T.J Roe explains the concept, design and construction of the sustainable Ecobuilding at the Arizona Army National Guard to the attendees of the FORSCOM Energy Managers Forum.



Attendees of the FORSCOM Energy Managers Forum examine one of the several tracking solar panel arrays used to suply power to the Ecobuilding at the Arizona National Guard, Papago Park Military Reervation in Phoenix.



## It's all about readiness

by COL Stanley H. Lillie

Through the Louisiana Maneuvers of 1941, the horse-drawn Army transformed itself into a mechanized force capable of fighting World War II. During the 1980s, AirLand battle doctrine and equipment modernization transformed the Army into a force capable of winning the Cold War.

Today, the Army again finds itself transforming to meet the nation's changing needs. Many of these changes came about with society's increasing environmental awareness, activism and regulation. Those years have also seen increasing civilian land use around once remote installations — use frequently incompatible with Army operations.

With ever more requirements coming over the horizon, the Army's point organization for environmental stewardship, the U.S. Army Environmental Center (USAEC), has transformed itself to meet them.

USAEC integrates environmental realities into programs that maximize the Army's ability to train and fight. The Center recently completed a year in which it tore down and rebuilt its vision, mission statement and structure.

We looked out at the future of the Army's environmental engineering needs and reaffirmed the need to focus on readiness. The Army must sustain readiness through realistic training — but at the same time be a good steward of the environment. With environmental stewardship an integral part of the Army's overall transformation strategy, USAEC plays an important role for the Army of the future as well as protecting its operations today.

This mission is immense. The Army manages 14 million acres of land with hundreds of posts, installations, and training sites, 1.2 million people and approximately 170 endangered species. The Army must plan appropriately to make certain its environmental responsibilities do not interfere with but in fact enhance training.

For example, environmental restoration, a core mission of USAEC since 1975, continues to be a success story. Over the past 25 years, the Army completed roughly 83 percent of its total restoration goals. We must also recognize that the sooner we clean up our lands the sooner the Army can focus on its primary mission of readiness.

The greatest changes for USAEC focus the Center on issues with potential for dramatic impacts on future Army operations.

For example, Army range sustainment and range response programs have become priorities. Sustainable range management entails the maintenance of lands to maximize their capability, availability and accessibility over the long term.

Unexploded ordnance poses one of the greatest dangers to sustaining our ranges in terms of their potential safety risk and the potential cost of cleanup. Regulators and stakeholders can use environmental statutes to require investigation and cleanup of active ranges, affecting the Army's ability to fulfill its national security mission.

The loss of training at the Massachusetts Military Reservation on Cape Cod is one example of a potential future. In 1997, EPA Region I prohibited use of lead ammunition, propellants, explosives, and demolition materials there to prevent possible impact on a sole source aquifer. This essentially shut down live-fire training at the installation (unless plastic, frangible and green ammunition are used).

Green ammunition is an effort on the part of USAEC and the U.S. Army Armament Research, Development and Engineering Center (ARDEC) to replace lead in small-caliber bullets. A replacement for lead bullets has become a priority for USAEC.

USAEC is funding efforts at ARDEC to develop lead free projectiles for 5.56mm, 7.62mm, 9mm and .50-caliber standard service ammunition. The new metal, tungsten, is

not toxic, is suitable for combat and is environmentally benign. Green ammunition will help reduce environmental compliance burdens on many small arms ranges.

Munitions regulations, a complex issue, will require USAEC and the rest of the Army to take deliberate measures in the areas of environmental research and development, risk assessment, range design and range management.

Conserving natural and cultural resources found on ranges and the rest of Army land is another growing responsibility for the Army. Finding common ground among the Army and various military, regulatory and private organizations is a critical part of this mission.

Conservation innovations led by USAEC include the Public Lands Initiative (PLI) on and around Fort Bragg, N.C. PLI is an Army partnership with the U.S. Fish and Wildlife Service and The Nature Conservancy preserving habitat for the red cockaded woodpecker. PLI addresses issues of conflicting or incompatible land use in a way that will protect the woodpecker's longleaf pine habitat and protect the installation boundary from incompatible land use by civilian communities.

The Army also must respond to mandates affecting the preservation of historic buildings, archaeological sites and Native American peoples. Over the next 20 years, 92,000 of the Army's 124,000 buildings will be at least 50 years old. The half-century mark triggers National Historic Preservation Act compliance requirements. Installations face a time-consuming regulatory review process for every maintenance, renovation and demolition action on a qualifying building.

USAEC anticipated this daunting prospect and joined the President's Advisory Council on Historic Preservation in creating the "Army Alternate Procedures." Installations now only have to consult once





every five years with state historic preservation offices, tribes and others in the implementation of these requirements. This action will likely reduce Army liabilities by \$1.5 to \$4.2 million per year for 30 years for a cost avoidance of as much as \$126 million.

Our look at the future also shows us that we need give pollution prevention. compliance, acquisition and technology programs a common focus: To start working on environmental compliance through pollution prevention.

USAEC experts, under the Army Environmental Acquisition Initiative, are integrating environmental issues into the life cycles of Army equipment and weapon systems. The Army estimates that more than 75 percent of all its pollution is caused directly or indirectly by weapon systems. Therefore, weapon systems brought on during the Army's transformation absolutely must be examined for environmental quality costs.

The environmental quality life cycle cost estimate for the RAH-66 Comanche Helicopter, completed last spring, was the first attempt to identify and quantify environmental costs over the entire life of a weapon system. This initiative identified \$329.8 million in environmental quality costs and provided several key pollution prevention recommendations that will provide future cost savings.

Beyond acquisition, USAEC is pursuing the demonstration and transfer of costeffective industrial processes and technologies designed to prevent pollution. From cleanup devices to better ways of doing business, these innovations will help protect the environment while supporting military operations, installation management and materiel development.

Judging the effectiveness of the Army's \$1.5 billion investment in environmental programs requires reports, statistics and other detailed analysis. Until last year, reporting information had been gathered piecemeal and maintained in separate databases. With the debut of the Army Environmental Database (AEDB), managed by USAEC, data from five key reporting systems are being integrated.

Our goal is to break out of reporting cycles and collect more real-time data so the Army can provide timely information to decision makers, improve data quality, and reduce costs. Changing environmental standards and new regulatory requirements will force installations to increase their levels of awareness and their ability to affect changes. USAEC's four Regional Environmental Offices (REOs) monitor legislative and regulatory issues and work with state regulators to ensure that proposed or existing laws and regulations do not adversely impact Army operations.

The future of Army environmental engineering is one that incorporates environmental considerations into research and development, testing, and acquisition processes as well as base operations, training, and deployments. It takes an integrated approach for data acquisition, analysis and evaluation. It is a world in which there are no longer "local" environmental issues but rather installation issues with Armywide impact.

USAEC has a track record of anticipating the Army's changing requirements and providing critical products and services to meet those needs. We see a future where every soldier has the basic skills to understand and protect the environment. Army readiness will require no less.

POC is USAEC Public Affairs Office, (410) 436-2556.

COL Stanley H. Lillie is the commander of the US Army Environmental Center. PWD

#### **Environmental POCs**

#### **US Army Environmental Center Headquarters**

5179 Hoadley Road Aberdeen Proving Ground, MD 21010-5401

#### **Integration & Installation Support** Office

(410) 436-6831

#### **Public Affairs Office**

(410) 436-2556

#### **Army Environmental Hotline**

1-800-USA-3845 OCONUS: 410-671-1699

EnvironmentalHotline@aec.apgea.army

Note: the hotline offers support to Army and installation staff and supporting

#### **Northern Regional Environmental** Office

(410) 436-7096

### **Southern Regional Environmental**

Army Environmental Technical Institute (404) 524-5061

#### **Central Regional Environmental** Office

(816) 983-3548

#### Western Regional Environmental **Office**

(303) 844-0953

### Mark Your Calendar

This year's DPW Training Workshop and Region/MACOM Engineer Conference will be conducted during the week of 2-6 December 2002 at the Omni Shoreham Hotel in Washington, DC.

Formal announcement and on-line pre-registration procedures will be publicized in the near future. Because the week of the workshop/conference follows Thanksgiving, we highly recommend that travel arrangements be secured as soon as reasonably possible.

POC is Dave Purcell, (703) 428-7613, e-mail: david.Purcell@hqda.army.mil



## Army Earth Day program hits stride

by Deborah Elliott

Earth Day has been celebrated at some Army installations for many years. In 1995, however, the Army's Earth Day program began to be centrally coordinated by the U.S. Army Environmental Center. The program came to USAEC through the Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health), or DASA (ESOH), as part of a DoD initiative to capitalize on the 25th anniversary of Earth Day and promote Defense Department environmental stewardship successes.

Since 1995, the Army has expanded Earth Day to include themes and products – such as the annual poster — that unify the program from the Pentagon to Army agencies, installations, activities and units. The program's audience has also grown to include federal agencies and environmental program partners, the general public and on-post communities, Army and government personnel, and environmental professionals and students.

The Earth Day program helps the Army increase awareness of its environmental initiatives, and promote understanding of its stewardship and readiness missions.

Through the dedication and diligence of Earth Day coordinators at installations around the world, Earth Day is one of the Army's most visible environmental programs.

This year Earth Day was celebrated at over 137 Army MACOMs, installations and organizations in the continental United States, Hawaii and Kwajalein Atoll, Korea, Japan, Italy and Germany.

At many installations, Earth Day is a well-established tradition; at others, Earth Day programs are just gaining momentum. A 2001 survey of 226 Earth Day coordinators found Army Earth Day reaching a broad audience:

69 percent of program coordinators

plan events that include their on-post community.

- 59 percent include soldiers.
- 51 percent include the off-post community.
- 38 percent include local environmental partners.
- 28 percent plan Earth Day events that include their federal and state environmental partners.

Activities planned for Army Earth Day are tailored for various audiences, according to the survey. The most popular events include clean up or other environmental projects (45 percent), educational school programs (36 percent) and exhibits or information booths (34 percent).

Army Earth Day events typically reach up to 150 people. Two events reach in excess of 10,000 people. They are frequently covered by local media: 65 percent of program coordinators seek media coverage, and 57 percent of them receive it. However, installation commanders hosted only 39 percent of 2001 Earth Day events.

The Army's Earth Day program is becoming "branded," according to the survey. A majority of program coordinators use the Army theme and graphics as the foundation of their events.

#### Successful Programs in 2001

#### FORSCOM, AEPI, USAEC - Public Outreach

U.S. Army Forces Command, the Army Environmental Policy Institute, the USAEC Southern Regional Office and the Georgia National Guard Bureau partnered in 2001 to bring Army Earth Day to the public at Zoo Atlanta. Maj. Gen. James E. Donald, FORSCOM DSCPIM, kicked off the event at the zoo's Ford Pavilion, where over 20 exhibitors representing Army, federal and

state environmental agencies provided information about environmental stewardship. Over 100 volunteers supported the event, which reached over 10,000 people at the two-day expo.

#### Fort Hood - Major Recycling Effort

The celebration of Earth Day takes a week at Fort Hood, Texas, where environmental activities range from endangered species protection to pollution prevention. One of the highlights in 2001 was Fort Hood's recycling effort, held by the Directorate of Logistics.

DOL formed eight teams and gave them a month to recycle as much trash as possible. The winners were recognized for their efforts during Earth Week at a formal ceremony where prizes were awarded to the "Rulers of Recycling" (1st place); "Dukes/Duchesses of Dumps" (2nd place) and the "Lords/Ladies of the Landfill" (3rd place). In the end, DOL had recycled in one month almost as much trash as it had in the previous two fiscal quarters.

#### Hawaii Army National Guard — Habitat Restoration

Environmental awareness is especially high in Hawaii, where the environment is easily damaged and difficult to restore. In appreciation for Earth Day, however, that is exactly what the Hawaii Army National Guard set out to do: contribute in a meaningful way to the restoration of the environment.

The site chosen was Battery Harlow, a World War I mortar emplacement located at Diamond Head crater. The Hawaii ARNG actually has been working to restore the site for many years, by planting a garden along the slope; clearing fountain grass and other non-native species, reintroducing native species and preserving what is left of the historic battery. Yet, they have not labored alone. Every year the bureau takes





# Path for funding ITAM land rehabilitation and management programs cleared

by Deborah Elliott

Installations seeking assistance with their Land Rehabilitation and Maintenance (LRAM) support projects will find that it is more readily available thanks to an agreement between the Natural Resources Conservation Service (NRCS) and the US Army Environmental Center (USAEC). NRCS chief, Mr. Pearlie Reed, and the Assistant Chief of Staff for Installation Management, MG Robert L. Van Antwerp, signed the Memorandum of Agreement on March 30, 2002.

The pact will facilitate funding and provide a range of support options to installations for LRAM land projects, which are the most-funded portion of the Army's Integrated Training Area Management (ITAM) program. The agreement ensures money from the Department of the Army and major commands earmarked for land rehabilitation and maintenance projects is allocated for its intended purpose. USAEC will transfer LRAM funds to the NRCS, which is required to disburse the funds for LRAM projects within an 18-month period.

NRCS will allocate the money based on the individual requirements of the installation according to a jointly developed plan that prioritizes LRAM projects for the site. The projects start with programming and plan designing, proceed to rehabilitating and maintaining the land, and may even extend to reconfiguring the landscape if necessary. Whatever is needed, the installation, USAEC and NRCS develop the plan together.

The goals of the LRAM portion of the ITAM program are to reduce the long-term environmental impacts on ranges by enhancing training lands and ensuring that they remain available for testing and training activities, now and into the future. Some of the objectives of LRAM are:

- Identify land maintenance requirements.
- Identify project sites that require restoration, rehabilitation or reconfiguration to improve access to training areas and increase duration of use.
- Develop a scope of work and prioritization of projects based on sound environmental data and desired outcomes.
- Evaluate success of completed projects and ensure that preventive maintenance is provided.

Angel Figueroa is USAEC's Range and Munitions Division point of contact for LRAM activities. Besides allocating funds for land projects, USAEC provides Figueroa services as a resource to assist Department of the Army Headquarters and major commands and installations in the planning and implementation of LRAM projects. As an NRCS liaison, Mr. Figueroa is available to assist in developing interagency agreements to facilitate the cooperation between an installation and the local NRCS office. He is also available to assist in inventorying, evaluating and prioritizing installation LRAM sites, and to develop plans to identify sound management practices to restore, protect and enhance training lands. All U.S. Army installations in the U.S., its territories and possessions are covered by at least one NRCS service center.

The National Guard Bureau and USAEC took advantage of an agreement between USAEC and the NRCS to provide soils planning level surveys on approximately 600,000 acres, avoiding costs of more than \$10 million. NRCS completed the mapping of most of this area at a total cost of about \$1.6 million (roughly \$2.70 per acre). Private soil mapping consultants indicated in informal conversations that they would charge about \$20 per acre - for a total of about \$12 million - to map the same 600,000 acres.

For more information about the ITAM program and land rehabilitation and maintenance projects, please contact Angel L. Figueroa at USAEC, (410) 436-1502, e-mail: angel.figueroa@aec.apgea.army.mil.

#### (continued from previous page)

advantage of two nationally recognized environmental celebrations — National Public Lands Day and Earth Day — to enlist help in restoring and preserving Battery Harlow. On April 22, 2001, the Hawaii ARNG worked side by side with Boy Scout Troops 32, 49 and 101, their family members and civilian volunteers to demonstrate environmental stewardship in a place where the lack of it can, and has, impacted Army training and readiness.

## US Army Corps of Engineers – Science and Safety Education

The U.S. Army Engineering and Support Center, Huntsville, Alabama, joined in an Earth Day event with the Ordnance and Explosive Detachment at the Redstone Arsenal in April 2001.

Together they provided environmental science and safety instruction to the students of a local middle school. More than 400 students and faculty received instruction on the basic environmental science and safety of unexploded ordnance. The Corps'

representatives provided the expertise in the basic science applied to geophysical mapping and ordnance removal while the Explosive Ordnance Disposal NCOIC provided his expertise about the equipment and procedures of ordnance safety.

POC is Deborah Elliott, Earth Day Program Coordinator for USAEC, (410) 436-1654. PWD



## **DoD oil recycling policy**

by William F. Eng

A Department of Defense (DoD) policy issued in March 1999 requires the use of certain items, as designated by the Environmental Protection Agency that are produced from recovered materials, unless one of three exemptions (price, performance, timely delivery) is applicable. One of these designated items is re-refined lubricating oil.

The Defense Logistics Agency (DLA), through its Defense Supply Center Richmond (DSCR), has two programs in place that can assist Army installations in meeting their legal requirements, under Executive Order 13101, "Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition" and the Resource Conservation and Recovery Act (RCRA).

The basic DSCR re-refined oil program was established in 1995. Under this program, customers around the world can order packaged re-refined oil products in

lieu of virgin motor oil with no minimum order quantities. DSCR offers the re-refined oil in various weights and container sizes. SAE 5W-30 and 10W-30 engine oils are available in accordance with CID A-A-52039. SAE 30, 40 and 15W-40 engine oils are available in accordance with A-A-52306, and SAE 15W-40 engine oils are available in accordance with MIL-PRF-2104. For more information go to the DESC website: http://www.dscr.dla.mil/pol/polcat.htm

DSCR's Closed-Loop Re-refined Oil Program began in 1998 and is available only in the continental United States. This program offers the delivery of packaged and bulk re-refined oil along with the pack-up of used oil for re-refining. The cost of the delivery and pickup of the used oil is included in the price of the oil. There are small minimum order requirements under this program.

DSCR offers the closed-loop re-refined oil in various weights and container sizes.

SAE 10W-30 and 15W-40 grades are available in accordance with CIDs A-A-52039 and A-A-52306, respectively and SAE 30, 40 and 15W-40 engine oil are available in accordance with MIL-PRF-2104. For non-DoD and Federal agency customers, SAE 15W-40 rerefined commercial heavy-duty oils are also available. More closed loop recycling information is available from DESC at:

http://www.dscr.dla.mil/pol/CL-PR.html

Special instructions have to be followed at installations that have outsourced their vehicle maintenance, so their contractors can also utilize the DESC Closed Loop Re-refined Oil Program. The DESC website has more details at:

http://www.dscr.dla.mil/pol/clrrutilize.htm

POC is William F. Eng, (707) 428-7078, e-mail: William.f.eng@hqda.army.mil

William F. Eng is a member of the Utilities Privatization Team, ACSIM. PWD

# DoD Munitions Action Plan addresses difficult environmental, safety issues

The Department of Defense recently issued the Munitions Action Plan (MAP). The MAP is a critical element of the Pentagon's ongoing commitment to the readiness of America's men and women in uniform and to effective stewardship of the environment. The plan is also a response to the growing concerns of the public and regulatory agencies about the environmental and explosive safety issues associated with management and use of munitions—particularly at current and former DoD test and training ranges.

The DoD's Operational and Environmental Executive Steering Committee (OEESCM) was formed in 1998 to comprehensively address these issues. The OEESCM recognized early on that DoD needed a plan to comprehensively address the issues in an integrated way. The OEESCM's permanent co-chairman, Mr. Ray Fatz (Army Deputy Assistant Secretary for Environment, Safety and Occupational Health) stated that the "MAP reflects the efforts of many DoD organizations that have worked...as part of the OEESCM team." (The Army's Office of the Assistant Chief of Staff for Installations Management provides executive support to the committee.)

Comments and input from the public and regulators were also considered in the plan's earliest development stages. The plan has been distributed to a wide variety of public and regulatory stakeholders whose input will be reflected in updated versions of the document.

The MAP establishes a framework that identifies "what" should be done but also provides DoD managers the flexibility needed to determine "how" to accomplish the plan's objectives.

The goal of the plan is to provide a comprehensive and consistent approach to managing military munitions across the munitions life cycle. DoD will use the plan to protect and enhance force readiness, maximize explosive safety and minimize the





# New guidance for cleaning indoor firing ranges

The U. S. Army Corps of Engineers has prepared new interim guidance for cleaning lead hazards at indoor firing ranges (IFRs), meeting a need that has been ongoing for the last few years, as installation commanders have begun converting indoor firing ranges to other uses.

The USACE headquarters, Environmental Division, Directorate of Military Programs, issued the new guidance on 10 April 2002, in the form of a Memorandum for USACE Commanders: Subject: "Interim Guidance for Lead Cleanups at Indoor Firing Ranges." The Memorandum contains IFR lead hazard cleanup criteria and related procedures. It reflects the clearance criteria of 200 µg Pb/ft? for all surfaces, which was determined by consensus of DoD firing range experts and industrial hygienists in October 2001.

The USACE interim guidance supplements U.S. Army National Guard publication addressing the operation of indoor firing ranges: NGB-AVS-SG, All States (Log Number P01-0075) Army National Guard (ARGN) Safety and Occupational Health Program – Policy and Responsibilities for Inspections, Evaluation, and Operation of

Army National Guard Indoor Firing Ranges; Addendum – Guidelines for IFR Rehabilitation, Conversion and Cleaning, 5 December 2001. The guidance will remain in effect until the U.S. Army's Center for Health Promotion and Preventive Medicine (USACHPPM) com-

pletes Technical Guide (TG) 206, "Indoor Firing Ranges."

For technical assistance regarding this USACE Indoor Firing Range cleanup guidance, please contact the **HQUSACE Safety** and Occupational Health Office (Robert Stout. 202-761-8566 or Richard Wright, 202-761-8565), or the USACE HTRW Center of Expertise (Rod Dolton, 402-697-2586,

rod.j.dolton@usace.army.mil or Thomas Donaldson, 402-697-2583, thomas.l.donaldson@nwd02.usace.army.mil).



 $Paint\ encapsulant\ being\ applied\ to\ surfaces\ above\ the\ bullet\ trap.$ 

(continued from previous page)

environmental impact of military munitions.

"Equipping and training our armed forces with the right munitions—for the right mission, at the right time—are central to our ability to fight and win the nation's wars," said Deputy Secretary of Defense Paul Wolfowitz. "Implementing the Munitions Action Plan will improve munitions management and is an important step in our efforts to address the challenges to force readiness."

The plan applies only to conventional military munitions and contains 29 specific objectives that are designed to result in faster, better and more cost-effective accomplishments of common goals for the military during what is referred to as the "munitions life cycle." The "munitions life cycle" consists of five phases:

- 1. Acquiring and producing munitions
- 2. Using munitions on test and training ranges
- 3. Managing the stockpile of military munitions
- 4. Demilitarizing excess, obsolete or unserviceable munitions
- 5. Responding to munitions constituents and unexploded ordnance

The MAP's life cycle approach reflects the environmental management concept of pollution prevention and seeks

"win-win" solutions. For example, development of new munitions having less environmental impact, but still just as effective militarily, would be such a solution. DoD hopes that addressing all phases of the life cycle will reduce the potential for negative environmental impacts at operational ranges, financial and safety liabilities associated with closed and former ranges, and minimize future problems across the board.

For a full text of DoD's Munitions Action Plan, please go to: https://www.denix.osd.mil/mapcrd.

POC is Connie Van Brocklin, ACSIM (ODEP), (703) 693-0546, e-mail: connie.vanbrocklin@hqda.army.mil





# Strategic Plan will address ranges, munitions

A plan to integrate environmental considerations into sustainable range management, munitions management and munitions response is under development by the ACSIM's Office of the Director of Environmental Programs (ODEP) and the U.S. Army Environmental Center.

The Strategic Plan for Environmental Support to Ranges and Munitions is scheduled to be approved by COL Richard Hoefert, Army director of environmental programs, in the spring.

"The Strategic Plan is a top to bottom strategy that begins with the Army Vision and Mission, articulates goals that support the Army Mission, and ends with objectives [and actions] that will achieve the goals," said Robert J. York, director of the USAEC Range and Munitions Division.

Central to supporting mission readiness is effective management of ranges and munitions, said Jeff Waugh, program manager in the Range and Munitions Division and a coauthor of the strategic plan. "The Army has established the goal for its range and munitions management program: maximize the capability, availability, and accessibility of ranges and munitions needed to train, test, deploy and mobilize."

The strategy will help the Army achieve this end state by providing environmental support to three key goals, according to Connie Van Brocklin, of the ODEP Range and Munitions Environmental Support Team.

"First, we are introducing a more sophisticated, integrated approach to range management. Second, we are designing and implementing initiatives to provide environmental support to management of the munitions life cycle. Third, we will address the legacy of prior practices by responding to military munitions, to include unexploded ordnance, and munitions constituents and perform the required response necessary to protect public health, safety, and the environment," Van Brocklin said. "By achieving

these goals, we will tactically manage our ranges and munitions and maximize their use to meet the Army Mission."

Integrated range management support means maximizing the ability of Army lands to support training, testing and logistical needs under both normal and "surge" conditions, over the long term. Implementing the plan will involve range operators, logisticians, and the environmental and real estate staff.

An integrated environmental support program will also address regulatory, operational and technological requirements of the munitions life cycle.

The Army effectively and safely manages large quantities of munitions, but managing this stockpile poses inherent explosives safety and environmental risks. The strategy is designed to integrate environmental considerations into life-cycle management of munitions.

While the Army is focusing on improving accuracy, increasing range and reducing costs of new munitions, public and regulatory bodies are raising concerns about safety and environmental effects.

The potential effects of munitions use must especially be assessed, such as clearance of unexploded ordnance and other debris to ensure continued use of the range and potential off-range effects of munitions use. For ranges leaving Army control, and those already transferred, the need to address munitions issues is more certain and more complex.

A program to ensure regulatory compliance on installations, and dealing with the growth of excess and obsolete munitions, will also be addressed.

Implementation of sustainable range and munitions management programs is designed to allow the Army to take a proactive approach to help ensure that the protection of public safety, human health, and environment does not become an issue. However, programs are also required to address the current problems created by the historical use and disposal of military munitions. The Army is implementing munitions response actions at transferring properties (the Base Realignment and Closure program) and as the Defense Department's executive agent for the Formerly Used Defense Sites (FUDS) program.

Explosives safety is the prime concern at properties that are transferring or have been transferred from military control and may be accessible to the public. These same concerns exist, but to a lesser degree, for closed ranges and other non-range properties on active installations.

"Response actions to munitions constituents that may pose an imminent and substantial endangerment to the public differ from the UXO clearance activities that currently are conducted on operational ranges," said Tom Symalla, a program manager with the Battelle Memorial Institute and coauthor, with Waugh, of the plan.

In addition, the Army's sensitivity to the need to consider the protection of natural resources has produced another set of challenges: the need to balance UXO response with the desire to protect natural resources. The intrusive nature of UXO removal can severely impact, if not eliminate, previously thriving sensitive habitats.

The strategic plan will identify the challenges to integrating environmental requirements across functional lines to support the Army mission and ensure the Army's range capability and munitions use into the future, Symalla said.

POC is Jeff Waugh, Range Operations Support Branch, USAEC, (410) 436-7104, e-mail: Jeffrey.Waugh@aec.apgea.army.mil





## **Recycling at Army installations**

by Malcolm E. McLeod

Recycling, including composting, is a solid waste management option that can save energy and natural resources, reduce the depletion of landfill space, provide useful products, and generate economic benefits. The first steps in recycling include the separation and collection of post-consumer materials. However, these are only the first steps. Post-consumer materials must also be reprocessed or remanufactured. More importantly, only when the materials are purchased and reused is the recycling loop complete.

AR 420-49 (Utility Services) requires installations to implement a Qualifying Recycling Program (QRP), where life cycle cost (LCC) effective. Recycling is also an important installation environmental program and is vital in helping an installation and the Army to meet the DoD Measure of Merit (MOM) for solid waste: a 40 % diversion from landfills by 2005.

The U.S. Army Corps of Engineers, Construction Engineering Research Laboratory has completed a Public Works Technical Bulletin (PWTB 420-49-12), which discusses the basic principles of initiating and operating installation recycling programs. This PWTB summarizes lessons learned in establishing successful recycling programs on Army installations, including:

- Description of recycling concepts and the components of a good recycling program.
- Summary of resources available to installations seeking to establish or improve a recycling program.
- Review of achievements of currently operating, effective installation recycling programs.

The information in the PWTB is helpful to installations operating or considering

implementation of solid waste recycling programs in addition to those looking for potential improvements.

PWTB 420-49-12, as well as a number of other aids that include solid waste and recycling areas, is now available on the Corps Engineering and Support Center (Huntsville) Techinfo Website (http://www.hnd.usace.army.mil/techinfo/CPW/pwtb.htm).

The HQUSACE proponent for this PWTB is Malcolm E.McLeod, CEMP-RI, malcolm.e.mcleod@usace.army.mil.
Further technical information and assistance can be obtained from the USACERL POC, Steven D. Cosper, CEERD-CN-E, (217) 398-5569, cosper@cecer.army.mil

Macolm E. McLeod works on environmental concerns at USACE, Environmental Directorate.

# **HSMS** software improves to meet requirements

by Aaron Tomarchio

A more powerful, user-friendly version of the Defense Department's standard automated management system software for hazardous materials was released to the Army in January.

Version 2.4 of the Hazardous Substances Management System (HSMS) software allows better manipulation of inventory items, multiple use screens and overall enhanced program functionality. HSMS is designed to help installations achieve Hazardous Material Management Program (HMMP) objectives meet environmental compliance requirements.

Upgrade from the previous version of the software does not require extensive database conversion, according to Army HSMS developers. The new version was fielded to existing HSMS sites in March.

HSMS software is an automated tool designed to facilitate compliance with

Executive Order 13148, "Greening of America", "Emergency Planning and Community Right-to-Know Act (EPCRA), Army Regulations, as well as other Federal, State or local regulatory requirements.

As the DoD standard automated information management system, HSMS provides "cradle-to-grave" tracking of hazardous substances as part of an installation's HMMP. HSMS enables its users to reduce costs associated with procurement, use and disposal of hazardous substances and hazardous materials.

HSMS 2.4 provides an easy "cut and paste" method to capture information for use on other applications. An enhanced hazardous waste module provides users with a detailed description on waste being added to a container and provides improved waste disposal documentation. HSMS v2.4 does not require any changes to current hardware and software standards.

As part of the Army program, the Army will continue to provide post deployment system support for HSMS users. Also, HQDA will initiate fielding of HMMP/HSMS to the rest of the Army beginning in FY04.

As the Army undergoes the reorganization to regionally managed base operations, the centralized management structure of the HMMP/HSMS program is designed to play a significant role in environmental compliance and the better management of hazardous materials and hazardous waste.

For more information, please contact the USAEC Hazardous Materials Management Program team at 410-436-7072. For the HSMS Customer Assistance Office call 1-888-800-7242 or e-mail hsms@saic.com.

Aaron Tomarchio works for the USAEC HSMS team. PWD



# Sustainability — a different shade of Army green

by John Scharl

#### What are "Sustainable - Green" buildings?

Sustainable Design and Development (SDD) is the consideration of current and future impacts on the environment, energy use, natural resources, economy, and quality of life. Since 2000, it has been Army policy that these principles be incorporated into installation planning and infrastructure projects.

Rooted in Executive Order 13123, Greening the Government Through Efficient Energy Management, SDD is intended to connote continuous design innovation and the use of state of the art industry practices.

The Army has taken a cue from the private sector and developed a military version of the Green Building Council's LEED (Leadership in Energy and Environmental Design) model, known as SPIRIT (Sustainable Project Rating Tool). This model, developed under the auspices of USACE labs, is now being used to evaluate our military construction projects in terms of their sustainability or, how well they incorporate "green" building techniques, such as recyclable building materials, energy efficiency, natural daylight and compatibility with the natural surroundings.

The Assistant Chief of Staff for Installation Management has challenged the Corps of Engineers to achieve a Bronze rating for all projects, with several being singled out as showcase projects at the Gold or Platinum level. This initiative is a common sense design and building practice that is intended to reduce lifecycle costs while helping the Department support other federal goals, like energy reduction.

The Corps is working hard to rise to the challenge. USACE has conducted 18 SDD Training workshops at select Corp Districts for facility planners and designers. Additionally, the Corps held the first sustainable charrette at Fort Bragg on a \$250M Barracks Complex; published ETL 1110-3-491 (Sustainable Design for Military Facilities); included SDD in construction

#### **ASA I&E memo to MACOM Commanders**

Leading architects, builders and customers are designing and constructing innovative, environmentally compatible, energy efficient, and people friendly buildings through a process known as sustainable design and development.

The Army has adopted the Sustainable Project Rating Tool (SPiRiT) scoring and rating process to characterize the sustainability of a building on a bronze, silver, gold and platinum scale. All buildings designed and constructed after June 2001 achieve a bronze rating with select showcase projects identified to achieve gold and platinum ratings.

I am convinced that this process is an excellent method for improving the quality of the facilities we build to support readiness, training and soldier well-being. Therefore, I ask your personal support to make this initiative a success. I have asked the Chief of Engineers and Assistant Chief of Staff for Installation Management to report back to me on actions being taken to incorporate sustainability into your construction projects. I would also be interested in any particular ideas or experiences that you may have had in implementing this program.

Mario P. Fiori Assistant Secretary of the Army (Installations and Environment)

design guides, specifications and A/E selection criteria; partnered with industry design and construction community to include SDD in projects; serves as a member of OSD's Work Group that published the Tri-Service Sustainable Planning Guide; and serves as a member of the US Green Building Council's LEED Building Rating Steering Committee.

In June 2001, USACE started using the Army's SPiRiT to evaluate and rate all infrastructure projects.

To achieve the greatest benefits, Army facility designers need to consider sustainability as early as possible in the planning and design phase of the project. Currently, priority is often given to justifying first-costs in construction and repair projects. This can result in "designing-out" sustainable strategies and features ignoring the potential for life-cycle savings. Although sustainable facilities can be built with less money, the challenge is to consider strategies that reduce the life cycle costs.

Another key factor is changing the traditional linear project design and delivery process to an integrated multi-disciplinary team approach. The team should include the owner, users, operators, architects, engineers, designers, planners, energy and environmental managers, contract officers, construction contractor and the public works staff.

Engaging the perspectives and expertise of such a team throughout the process facilitates setting sustainable goals, balancing resource priorities, meeting mission needs and delivering high performance facilities. It also facilitates awareness of how systems and materials affect initial and life-cycle costs, operations and maintenance practices, and performance over the life-cycle.

#### Sustainable Showcase Projects

OACSIM and HQUSACE are designating a number of MILCON projects each year as Showcase Projects. All installations are encouraged to designate their own SDD Showcase Projects and strive for higher SPiRiT rating levels (Gold and Platinum). The Army's SDD showcase projects are:

FY 02 projects: Barracks at Forts Richardson, Alaska and Lewis, Washington; Community facility at Fort Gordon, North Carolina; Education center at Fort Polk, Louisiana; General Construction



Building at Camp Jackson, Korea, and the Military Preparation School at Fort Monmouth, New Jersey.

FY03 projects: Barracks at Forts Benning, Georgia, Bragg, South Carolina, Campbell, Tennessee and Schofield Barracks, Hawaii: Community support center at Fort Detrick, Maryland; and Mission Support Training facility at Fort Wainright, Alaska.

#### Renovation at Fort Monmouth

Project Design Background: The Epsten Group, Inc., Atlanta, GA, was invited by the Army Corps of Engineers, New York district, to chair a two day sustainable design charrette for the Monmouth Renovation of Barracks project in April 2001. Participants included representatives of the U.S. Army Corps of Engineers New York District; the Directorate of Public Works (DPW) at Fort Monmouth, Staunton Chow engineers, and the U.S Army Materiel Command. The participants were involved with the project as designers, administrators, and installation personnel.

The renovation consists of two threestory buildings with a combined area of approximately 160,000 sq. ft., serving the training functions of the U.S. Military Academy Preparatory School. Students will live in the facilities while in training, and have access to indoor athletic facilities, dining, and an outdoor athletic field, which will double as the location of new geothermal loops.

Each of the two buildings is U-shaped. currently with dormitories, offices, and athletic facilities in the two wings of each building, and common areas, including dining, in the middle section. All areas will be renovated, except for the dining facilities, an auditorium, and other common areas in the middle sections. The basement of these areas is included in the renovation. The new functions are essentially unchanged.

The renovation includes: reuse existing buildings; energy modeling; closed loop geothermal system and constant volume system; water efficient landscaping; recycling paper, glass, plastic & metal; low emitting materials; local products; and extended commissioning.

#### Fort Hood's first "green" facility

The Fort Hood Directorate of Public Works (DPW), in concert with Steinbomer and Associates Architects, Bragg Landscape, Fire Protection Engineering, Beneco Enterprises, Jaster-Quintanilla & Associates, Way Consulting Engineers, HMG Engineering Associates, Austin Energy's Green Building Program and the Army Corps of Engineers, has partnered to design and build Fort Hood's first ever "green" facility. The Fort Hood Environmental Training Facility will be the first of its kind to earn the COE's SPiRiT Platinum certification level, the highest certification level.

This new 5000 sq. ft. multi-purpose training facility will be located in the southwest part of main Fort Hood, near the current DPW headquarters. A dedicated team effort capitalized on sustainable methods and practices while integrating new energy management technologies and methods.

This facility will combine the latest in energy management technologies, while encompassing sustainable design concepts. Part of the floor is salvaged from a recently demolished bowling alley. The exterior walls will be made of straw bales, and the sand for the stucco will be ground bottles from Fort Hood's recycling center. The facility will utilize waterless urinals and low flow toilets to conserve water.

In addition, rainwater collection will be used for a drip irrigation system. The landscaping design will utilize low maintenance, local vegetation while meeting FORSCOM

force protection requirements. For further energy management practices, active daylighting will be used, with motion sensors throughout the facility to turn lights off when not needed.

The orientation of the building is set to maximize the local weather patterns for cooling. The insulation factor of the straw bales, combined with

the highly efficient windows will provide a reduced need for conditioned air during the long hot Texas summers.

Fort Hood quickly realized that they couldn't do it all. Trade-off decisions were made based upon desired sustainability versus budgetary restrictions. Life cycle cost analysis was used to determine energy management methods that would give the biggest bang for our buck, while earning enough points to achieve SPiRiT certification.

Another important element is patterning the project to the area. Full length porches on the south, a breezeway to capture wind, double hung windows and a metal roof all help keep the building comfortable in the hot, humid climate of Central Texas. The use of low-emitting materials was patterned after local or state regulatory requirements.

The success of the project was a direct result of an energized team experienced in sustainable designs and projects, and motivated to think "outside" of the box. Scheduled for completion in summer 2002, this facility is part of Fort Hood's ongoing efforts to "Green the Government." The Fort Hood project may be the first project to achieve an SDD Showcase SPiRiT rating.

POC is John Scharl, (703) 428-7614 DSN 328. e-mail: john.scharl@hada.armu.mil

John Scharl is an engineer in the Facilities Policy Division of the ACSIM.





Designers worked hard to "green" the Pentagon during renovation.



# Overcoating extends steel structures' life, abates lead-based paint

by Dr. Ashok Kumar and Dr. Larry Stephenson

Advanced overcoating systems can provide a lower cost option to cleaning and repainting large steel structures such as water storage tanks and hangar doors. At Fort Campbell, Kentucky, commercially available moisture-cure polyurethane coatings proved successful in refurbishing a deluge tank for a fire protection system.

This demonstration was conducted by the U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) under the Corrosion Control Technology

Many of the commonly used protective coatings on steel structures peel and spall, or otherwise deteriorate, due to the combined effects of exposure to sunlight, changing humidity, and hot-cold cycles during natural weathering. In the past, lead-based paint was often used as a primer for these structures because of its superior protection. When these coatings fail, the lead can contaminate the environment. However, removing lead-based paint is expensive, requiring worker protection, containment of the waste, and disposal in a hazardous waste landfill.

One of DoD's lead-based paint hazard control and mitigation options is in-place management using overcoating. Industry

has developed innovative coatings, such as the moisture-cure polyurethanes, that can be applied over bare steel or existing degraded coatings to provide corrosion protection. These coatings cure by absorbing moisture from the air and can be applied even in cold conditions and under high humidity.

**ERDC's Construction Engineering** Research Laboratory (CERL) applied overcoatings from two manufacturers at Campbell Army Airfield to assess their performance. The deluge tank chosen for the test had a deteriorated external paint system consisting of TT-P-86 Type I, Red Lead Linseed Oil Primer, and TT-P-38 Aluminum Pigmented Tung Oil Phenolic Coating. Test patches totaling 1,200 square feet were applied over the existing coating, without any surface preparation, in October 2000.

A condition assessment the following spring showed that both systems performed well, with no evidence of blistering, spalling, or peeling. In August 2001, the entire surface of the deluge tank was overcoated with one of the systems tested.

Overcoating steel structures with advanced coating systems can extend the service life by preventing corrosion. Further, when existing coatings contain lead paint or



Deluge tank at Fort Campbell Army Airfield showing overcoated patches at bottom.

other hazardous materials, overcoating can greatly reduce the cost of mitigation since the old paint does not have to be removed or disposed.

The moisture-cure polyurethane used at Fort Campbell is projected to extend the tank's service life by 20 years. The DPW is considering other structures for treatment with the overcoatings, such as a railroad bridge and hangar doors.

CERL provided product information and specifications to Fort Campbell based on the test results.

For more information on corrosion mitigation, please contact Dr. Ashok Kumar or Dr. Dave Stephenson, (217) 373-7235 or -6758, toll-free 800-USA-CERL, or e-mail: Ashok.Kumar@erdc.usace.army.mil or Larry.D.Stephenson@erdc.usace.army.mil.

Dr. Ashok Kumar and Dr. Larry Stephenson are researchers at CERL. PWD



# **Specifying paint**

by Al Beitelman

Paint has been around for thousands of years, but the way the federal government specifies paint has never undergone such radical changes as it has in the past decade. The most recent changes have been brought about by what has been termed "acquisition

reform" driven by the Federal Acquisition Regulation (FAR).

Essentially the FAR states that Federal Government agencies are supposed to specify products generically as much as possible. To this end, Army, Navy, General Services

Administration (GSA), and most other agencies have been specifying paint by referencing the Master Painter Institute (MPI) specifications which tests paint to determine performance before the paint is put onto their "Detailed Performance" lists.



#### **FAR Specifications**

FAR places specifications in three categories in order of preference: Third preference is the traditional government federal or military specification (TT-P-xxx or MIL-P-xxxx). These specifications often describe paints in terms of specific amounts of ingredient materials. Manufacturers can formulate products to meet the requirements but the products are usually not available on the shelves of the local paint store.

Second preference is a performance specification. Within the government these specifications could take the form of commercial item descriptions (CID) (A-A-xxx). These documents are quite short and describe a paint in terms of specific performance requirements. In the development of a CID the government must verify that commercial products do exist which will meet the requirements. Since not all products will meet the requirements, testing must be performed to verify that any given product has the required performance.

First preference is industry specifications. Obviously it is assumed that if industry has developed the specification, there must be industry products available which meet the requirements of the specification. Another benefit is the fact that the government does not have to bear the expense for developing and maintaining the specification. Within the past decade there has been an incentive for government agencies to show progress toward the greater use of specifications in a more preferred category.

The federal and military specifications will probably never completely go away for highly specialized coatings, but the specifications for the majority of the common paints were cancelled in favor of CID specifications in the mid 1990s. This should have been a step in the right direction, but unfortunately, the commercial products were often not tested for CID compliance and the application of inferior products resulted in low performance.

#### Master Painter Institute (MPI)

The big change to industry specifications began with a meeting in late 2000

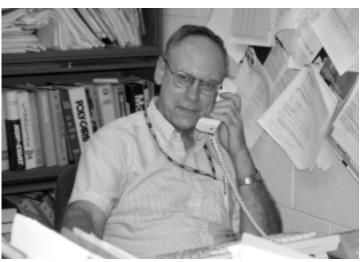
when Army, Navy, GSA, and others agreed in principle to convert guide specifications to reference industry specifications developed by the Master Painter Institute (MPI). MPI is a private company that has written its own specifications. The company tests offthe-shelf paint to its own specifications. Paints meeting these requirements

are added to a WEB listing of approved products. At this time, government agencies are only using the MPI "detailed performance" listed products.

All products on the various MPI detailed performance lists have been tested and found to meet specific performance requirements. There is also a sideline on these lists that identifies the level of volatile organic compounds (VOC) in the paint. By requiring an MPI listed product having a specific VOC category, an installation can control the emissions from the painting operation.

MPI has only begun to add a second sideline to some of its products, which gives the products an Environmentally Preferred Product (EPP) rating. This rating takes the VOC rating and gives additional points based on anticipated repaint interval (e.g. flat paints on walls, regardless of quality, get dirty easier so will need repainting sooner than paints with a higher gloss). These EPP values are very new but may eventually be accepted as justification for Green Building credits.

For the facility engineer, the use of MPI specifications has several benefits. Use of the specification rather than specific brand names assures competition as required by the FAR. Contracts can be developed using standardized guide specifications that are in the universally accepted CSI format. It also insures that the paint



Al Beitelman responds to questions on MPI specs.

has already passed certain tests and will provide a given level of performance.

The contractor can select any paint from the web listing and apply it without further testing. In most cases, the contractor has a choice of suppliers including both national and regional manufacturers, thus allowing the selection of an easily obtained product having cost and application properties consistent with his operation.

The MPI specifications are used in Army and Navy guide specifications UFGS 09900 and are available on the MPI WEB site, http://www.paintinfo.com/.

The U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory (ERDC-CERL) serves as the Paint Technology Center for the US Army Corps of Engineers.

POC is Al Beitelman, (217) 373-7237, e-mail Alfred.D.Beitelman@erdc.usace.army.mil.

Al Beitelman is a researcher at ERDC-CERL. PWD

New web address for:

Installation Support Training Division at Huntsville, Alabama

http//pdsc.usace.army.mil



# Change in attitude makes saving environment team effort

by Barbara L. Sellers

When it comes to protecting the environment, Fort Lewis takes the lead. Since winning the White House "Closing the Circle" Award in June 2001, the post Environmental and Natural Resources Division (ENRD) staff continue to find innovative ways to help "Mother Earth" thrive.

"We want this installation to endure, not just today but for many years to come," said Paul Steucke, Jr., chief ENRD. "Military training will continue, and there are ways for that to happen while still protecting the environment."

The change in attitude toward our environment, he said, helps the ENRD accomplish its mission.

"Today's ethic, the individual's understanding and willingness to support the environmental programs, is much stronger," Steucke said. "I've noticed that to be true among the enlisted soldiers, but that's also true in the officer ranks, especially in the senior officer ranks. That's why it's almost easier in some ways to do what we have to do even though environmental guidelines and laws are more strict now than before."

Over the last few years some areas in which the installation has made significant environmental progress include:

- ISO (14001) Environmental Management Systems Certification
- Installation Sustainability Plan
- Integrated Training Area Management
- Forestry Program
- Model Motor Pool Project

#### ISO 14001 Environmental Management System

"Public Works is the first Army organization to achieve ISO 14001 (International Standards Organization) certification," Steucke said. "The accredited ISO registrar performed a certification audit in August

2000 and granted certification to Public Works in September 2000. This shows we are carefully taking care of our environment in our daily activities - not just sometimes, but all the time."

Under
Department of
Defense direction, he
explained several

Army sites, including Fort Lewis, participated in a two-year ISO 14001 pilot study in 1998 and 1999. ENRD led the study conducted within Public Works.

"ISO 14001, which is one in a series of international standards for management, establishes requirements for an Environmental Management System," Steucke said. "The standard consists of 17 core elements within five major areas: Environmental policy; planning; implementation and operation; checking and corrective action; and management review."

An executive order, he said, requires all federal facilities to implement an Environmental Management System by 2005.

#### **Installation Sustainability Plan**

The Installation Sustainability Plan, one of the newest ENRD accomplishments at Fort Lewis, establishes long-term environmental goals for the post, projecting 25 years into the future, Steucke said. "The ISP is a FORSCOM-supported initiative being implemented across the command," he said. "Fort Lewis is the second installation to put this program in place."

"When it comes to the environment, however, we have no quick fixes," Steucke said. "It's very important for us to do longrange planning - to continually do some-



thing to sustain and protect the environment for the future as well."

That's why he said Fort Lewis hosted an ISP workshop in February 2002. Six workshop focus teams then developed 12 long-range goals (most with the year 2025 as the milestone for attaining the goal) in air quality; infrastructure; training lands; products and materials; energy; and water supply and quality.

"We have a state-of-the-art water treatment plant," said Phil Crawford, water quality program manager. "The water is tested regularly for bacteria and also tested annually at the source. We want to ensure the drinking water at Fort Lewis always meets high-quality standards."

"Some of the sustainability goals we have set cannot be achieved with the tools we have today," Steucke said. "When we set these long-range goals, we do so with the idea that whatever it takes to make it happen will be available when we need it. By setting these goals, it stimulates the research community into finding solutions to achieve them."

#### **Integrated Training Area Management**

"The Itegrated Training Area
Management program is based on the integration of the military mission, natural
resource stewardship, and



environmental compliance," said Inger Gruhn, ITAM coordinator. "ITAM provides for maintenance of Army training land to ensure quality training and realism, while reducing environmental damage and enhancing the public image of the Army as a conscientious land steward."

#### **Forestry Program**

"Soon we will be the first organization in the Army to have our Forestry Program certified," Steucke said. "I expect that to happen within the next couple of months. The Forest Stewardship Council is prepared to certify the Fort Lewis Forestry program as a sustainable forest. This means the wood harvested on the installation is certified and can be sold as 'environmentally friendly' wood."

"The FSC is an international non-profit organization founded in 1993 to support environmentally appropriate, socially beneficial and economically viable management of the world's forests," said Gary McCausland, installation forester.

Steucke said the Forestry Program increases the quality of the habitat and, at the same time, uses innovative methods that are compatible with the training mission.

"The Forestry Program maintains the highest net generation of revenues for the Department of Defense Natural Resources Program and Cost/Benefit ratio of any Army installation," he said.

The installation selectively harvests about 8 million board feet per year over 2,000 acres.

"This generates about \$4 million, which more than covers the cost of operating the program (\$1.8 million)," Steucke said. "Another \$.7 million goes to counties in lieu of taxes, the remainder goes to support other military installations."

All forestry activities, he said, must be coordinated through the Command Group and Range Control.

#### Model Motor Pool project

"The majority of hazardous and nonhazardous waste at Fort Lewis is comprised of fluids and supplies for vehicle maintenance activities," Steucke said. "This includes solvents, motor oil, fuel, antifreeze, hydraulic fluid, brake fluid, automatic transmission fluid and gear oil."

He said the Model Motor Pool project (implemented in 1999) looks at new technologies to address these concerns.

"The two-fold goals of this project include reducing pollution generated by routine vehicle maintenance operations and to create a cooperative relationship between soldiers and environmental professionals," said Terry L. Austin, Pollution Prevention program manager. "The initial Model Motor Pool (Phase I) resulted in a 1,000 pound reduction of the amount of hazardous and non-hazardous waste during the first nine months of operation."

The 80th Ordinance Battalion, the pilot unit, saved waste disposal and procurement costs; and its soldiers were able to perform their maintenance tasks more safely and efficiently, Steucke said.

Currently, this project is in Phase III.

Taking care of the environment and reducing pollution requires more than simply finding methods that work, Steucke said.

"Part of our job is to make it easier for soldiers to do the right thing than the wrong thing," he said. "So we try to find easy ways to reduce pollution that everyone will want to use consistently. Then we can spend more of our time fixing problems and less time monitoring to ensure everyone is doing what they're supposed to be doing."

That means the ENRD staff must keep an open attitude to keep those creative ideas coming.

"When somebody calls us to get information about what we're doing, sometimes we find out about new things we haven't tried here, yet," Steucke said. "But mostly, our ideas come from our own staff. I encourage all of our staff members to be independent thinkers, and I've been lucky because I have so many creative people working for me."

POC is Paul Steuke, (253) 966-1760, steukep@lewis.army.mil

Barbara L. Sellers is the editor of the Northwest Guardian.

# Elimination of FY02 Barracks Upgrade Program (BUP)

by Charles Huffman

The Barracks Upgrade Program has successfully renovated over 35,000 barracks spaces with Operation and Maintenance funds since Fiscal Year (FY) 1997. This program was eliminated by Congress in FY 2002, which instead, targeted those funds to Sustainment, Restoration and Modernization (SRM) at particular MACOMs.

While the need for more SRM dollars is recognized, we are disappointed that barracks were used as a bill payer, because approximately 3,200 barracks spaces will not be renovated this year.

This action affected only FY 2002. The Assistant Chief of Staff for Installation Management is exploring all options for restoration of these funds in future years to get our barracks program back on schedule.

POC is Charles Huffman, (703) 428-6801, e-mail: charles.Huffman@hqda.armu.mil

Charles Huffman is an Army Housing Engineer in the Army Housing Division, ACSIM. PWD



# DoD establishes goal to eliminate inadequate family housing

by Thomas A. Kraeer

This past year has been very exciting for Army family housing. We have made great strides in building programs and obtaining funds to significantly improve the quality of life for our soldiers and their families. Several years ago the Secretary of Defense established a goal to eliminate all inadequate family housing by FY 2010. Congress supported this goal and directed each service to develop a family housing master plan as a roadmap to determine the way forward.

The Army submitted its first Family Housing Master Plan (FHMP) to Congress in June 2000. At that time, the Army could only program enough funds to meet the FY 2010 goal in Europe, but fell short in the U.S by only meeting it by FY 2014. During the following year, Army leadership made several key decisions that provided the funding necessary to meet the FY 2010 goal in the U.S. The FHMP submitted to Congress in July 2001 showed that the Army had a plan using a combination of privatization and family housing military construction funds to meet the Secretary's FY 2010 goal.

In August 2001, the Department of Defense decided to take a more aggressive approach and adjusted the goal to eliminate all inadequate family housing from FY 2010 to FY 2007. The Army quickly responded by programming an additional \$1.0 billion dollars to add to the Army Family Housing Military Construction Program over a three-year period starting in FY 2005. These additional investment funds allow the Army to meet the new Defense goal and provide sufficient funding to fully sustain the condition of the units once they are fully renovated.

To support these goals, the Secretary of Defense developed a three-prong strategy designed to improve the quality of life for soldiers and families who live off post as well as those living on post in government quarters.

The first prong of this strategy was to eliminate all out of pocket housing costs for

soldiers and their families living in privately owned housing in the U.S. by FY 2005. In the past, soldiers where expected to contribute about 19% in addition to their Basic Allowance for Housing (BAH) for an adequate house on the local economy. Funding for this initiative started in FY 2000 by incrementally reducing out of pocket costs to meet the FY 2005 goal. Today, in 2002, the out-of-pocket housing cost for a soldier is estimated at 11 percent and will continue to decrease over the next couple of years to zero. This means soldiers will no long need to use their disposable income to meet housing needs.

The second prong of the Secretary's strategy includes the increased use of privatization to meet the family housing needs. In 1996, Congress provided legislation allowing the government to partner with the private sector to obtain private capital to use in modernizing the Army's aging housing inventory. The Army successfully awarded their first privatization project in the fall of 1999 at Fort Carson. To date, this project has been a huge success with completion of over 300 new on post units and the revitalization of many of the existing units. The plan is to build a total of 840 new units and completely revitalize all existing units by FY 2005.

The second privatization project was awarded in the summer of 2001 at Fort Hood, Texas. The scope of this project includes the renovation of over 5,600 units and the construction of 290 additional units. This project, like Fort Carson, is off to an excellent start and the soldiers and families assigned to Fort Hood can look forward to living in modern on-post housing in the near future. Family housing privatization projects at Forts Lewis and Meade are scheduled to begin later this year. Although these four projects complete the Army's pilot program, twenty additional installations plan to privatize their family housing inventory over the next three years. By FY 2006, it is estimated that over 62% or 68,000 family housing units in the U.S. will be privatized.

Privatization is the key reason the Army meets the Secretary's goal to eliminate all inadequate family housing by FY 2007.

The last prong in the strategy is continued reliance on military construction funds for those units the Army plans to retain as government owned. Approximately, \$3.0 billion has been programmed through FY 2007 to modernize our family housing inventory overseas and those installations in the U.S. that are not going to be privatized.

DoD established aggressive goals and provided the services with a strategy that improves the quality of life for soldiers and their families living off-post in private housing and those who are living on-post in privatized or government owned units. Army leadership is totally committed to ensuring sufficient funds are programmed to meet these goals. The reduction of out of pocket cost for soldiers living in private housing has begun and soldiers are the beneficiaries of that today.

The Army's privatization program is off to a great start and soldiers assigned to Fort Carson, Colorado are now living in modern housing because of this program. Twenty-three installations in the U.S. will soon follow. Soldiers living in Europe are starting to see the effects of our reliance on military construction by living in units with modernized eat in kitchens, additional baths and in unit laundry rooms.

Although there is still a way to go, we know that the goal has been set, a strategy to meet the goal is in place, and the funds have been programmed to ensure every soldier and his family lives in a quality house wherever they are assigned. Our soldiers deserve the best and our leadership is committed to ensuring they receive it.

POC is Thomas A. Kraeer, (703) 428-7285, e-mail: thomas.kraeer@hqda.army.mil

Thomas A. Kraeer is a Senior Housing Management Specialist in the Army Housing Division, ACSIM. PWD

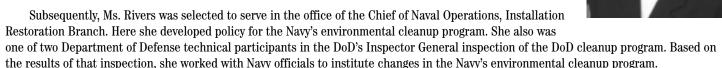


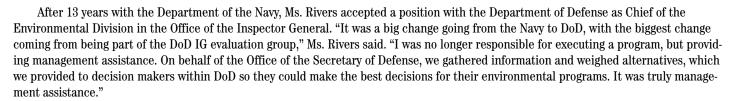
# Who's Who at HQ Patricia A. Rivers—Chief, Environmental Division

Ms. Patricia A. Rivers entered the Department of Defense in 1977 after graduating from Worcester Polytechnic Institute, Worcester, Massachusetts, with a Bachelor of Science degree in civil engineering. She is a registered professional engineer in the Commonwealth of Virginia.

Ms. Rivers began her Federal civil service career at Headquarters, Naval Facilities Engineering Command in Alexandria, Virginia. She held positions as facilities engineer, environmental engineer, and program manager for the Navy's environmental cleanup program.

In 1985, she moved to the Chesapeake Division of the Naval Facilities Engineering Command, where she was responsible for cleanup and compliance in support of Navy and Marine Corps installations in the Washington, D.C., metropolitan area.





In January 1994, Ms. Rivers was appointed to the Senior Executive Service position of Assistant Deputy Under Secretary of Defense for Cleanup. She was responsible for developing environmental cleanup policy for Defense activities worldwide and for overseeing implementation of that policy by the military components.

While serving in this position, she was presented with the Office of the Secretary of Defense Award for Outstanding Achievement, recognizing her efforts in promoting greater community involvment in the DoD environmental cleanup program through the establishment of Restoration Advisory Boards. She also received the Department of Defense Medal for Distinguished Public Service for implementing the relative risk model for the DoD cleanup program, for obtaining stable funding for the program, and for institutionalizing the program into DoD's planning, programming and budgeting system.

Ms. Rivers assumed her current position as Chief, Environmental Division, Directorate of Military Programs, Headquarters, U.S. Army Corps of Engineers in April 1998. Her management responsibilities cover a number of strategic programs and activities to include: Army Installation Restoration, Army Base Realignment and Closure Environmental Restoration, the Formerly Used Defense Sites Program, Installation Environmental Quality Mission and the Formerly Utilized Sites Remedial Action Program.

She also works at the executive level to plan and oversee environmental support for a number of other non-Defense agencies including the Environmental Protection Agency.

"The goal of the Corps of Engineers environmental program is to be available, ready and actively engaged as Army installation management is centralized to meet its environmental challenges," Ms. Rivers said. "When you think about environmental issues like encroachment and how Army installations are embracing sustainability when looking to the future, the Corps has to keep focused on providing every opportunity and advantage to help installations transform."

Ms. Rivers is the past national chair of the Society of American Military Engineers Environmental Affairs Committee, past president of the Montgomery C. Meigs Chapter of the Army Engineer Association and a member of Women in Defense.

Married to COL Ervin "Doc" Rivers, commander of the Marine Corps Depot at Yermo, California, Ms. Rivers has three sons.



# ECITION DAY 2002

PROTECTING OUR FREEDOM

PRESERVING THE ENVIRONMENT